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Evolving towards
a net-zero future



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LIFTING THE LID

EVOLVING TOWARDS A NET-ZERO FUTURE

Can polymeric technology help to accelerate decarbonisation across multiple industries, asks *Chloe Hirst* from *Belzona*.

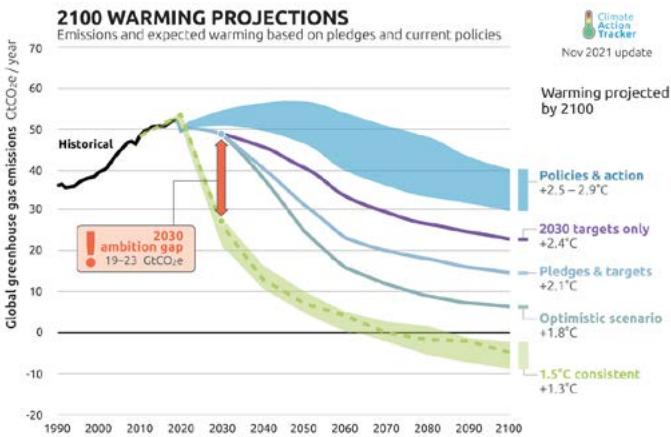
Polymeric systems can help many industries ratchet up their carbon intensity reduction plans

Belzona offers a comprehensive portfolio of polymeric repair and protection systems



While real progress was made at the COP26 Summit, the main conclusion drawn by the Glasgow Climate Pact was that further emissions cuts are required and need to be provided by the end of 2022. This is to ensure that countries are on track to meet the UN Paris Agreement’s target of net-zero by 2050.

In order to achieve these carbon reductions, the 2021 State of Climate Action Report, authored by the world’s top climate analysis coalition, Climate Action Tracker (CAT), which is backed by a number of organisations including the prestigious Potsdam Institute for Climate Impact Research in Germany, explains how. “In some industries, the technologies, practices, and approaches needed to accelerate



Source: Climate Action Tracker



decarbonisation are well understood but have not yet seen the levels of investment and political support needed to rapidly scale up mitigation action.”

As polymeric repair composites and protective coatings fall into the bracket of ‘technologies’ that can actively ‘accelerate



decarbonisation’, it could be argued that further investment into these systems could help many industries to ratchet up their carbon intensity reduction plans in line with the net-zero target.

Further emissions cuts needed

According to data from CAT, based on the goals made at the COP26 Summit, global warming is projected to rise to 2.4°C by 2050. Although this is an improvement on the 2.7°C rise that was projected prior to the conference, it is still way off the 1.5°C target.

To sum up the situation, the report said: “The transitions required to avoid the worst climate impacts are not happening fast enough.”

As such, the report identifies how it is imperative that transformations towards a net-zero future must occur throughout every sector of society at a pace that is far faster than recent trends.

Indeed, as the goals set at COP26 fell short of achieving the Paris Agreement’s net-zero target, countries are preparing to deliver on COP26’s request to “revisit and strengthen their current emissions targets to 2030 in 2022.”

Outlook for industries

The CAT’s report goes on to share statistics on the carbon intensity reductions that need to be made by numerous industries including power, steel, cement and buildings, amongst others, by 2030, in order to limit warming by 1.5°C by 2050.

These reductions include:

- The carbon intensity of electricity generation will need to reduce to 50-125g CO₂/kWh
- The carbon intensity of steel will need to decline by 25-30% (relative to 2015 figures)
- The carbon intensity of cement will need to decline by 40% (relative to 2015 figures)
- The carbon intensity of operations in select regions will need to decline by 45-65% in residential buildings and by 65-75% in commercial buildings (relative to 2015 figures).

Unlocking polymeric materials potential

As part of the ever-growing arsenal of carbon mitigation technologies and initiatives, industrial coatings and repair composites can help industries such as those outlined above to achieve these reductions.

→ A roof protected with a liquid waterproof flexible membrane, Belzona 3III

With a comprehensive range of polymeric systems including epoxy repair composites, high-temperature coatings, liquid waterproof membranes, elastomeric roof coatings and pipe wraps, amongst others, these systems have been proven to not only repair and protect damaged assets across many different industries, but to also intrinsically improve them for the long term.

The environmental implications of this are astronomical. By bypassing the need to replace damaged assets and instead actively improving them, industries can make great strides in minimising their carbon footprints.

Economic benefits of investment

The report also describes the need for “energy- and process efficiency practices [that] can be economically feasible and help drive industrial system transitions”.

Investment into composite repair materials and industrial coatings is also an ‘economically feasible’ option. Purchasing these systems mitigates the fees that can accumulate in the process of asset replacement. These fees include the cost of the asset being replaced, the labour required during the removal, disposal and installation process and also the downtime that can be incurred during this procedure.

For these reasons, an increase in investment into these technologies would help many different industries in the process of ratcheting up their 2030 emissions reduction plans, in line with the net-zero emissions by 2050 scenario, in a way that is also financially advantageous.

Technology honed over 70 years

For decades, companies such as Belzona, which was first established 70 years ago, have been developing polymeric materials to improve the “energy and process efficiency” of buildings, structures, machinery and equipment found across multiple different industries.

Examples of polymeric systems include:

- Products such as high-performance coating Belzona I34I (Supermetalgilde), which can intrinsically improve pump efficiency by using hydrophobic technology to repel process fluids and reduce turbulent flow. This can create efficiency increases of up to seven per cent on new equipment and up to 20% on refurbished equipment.



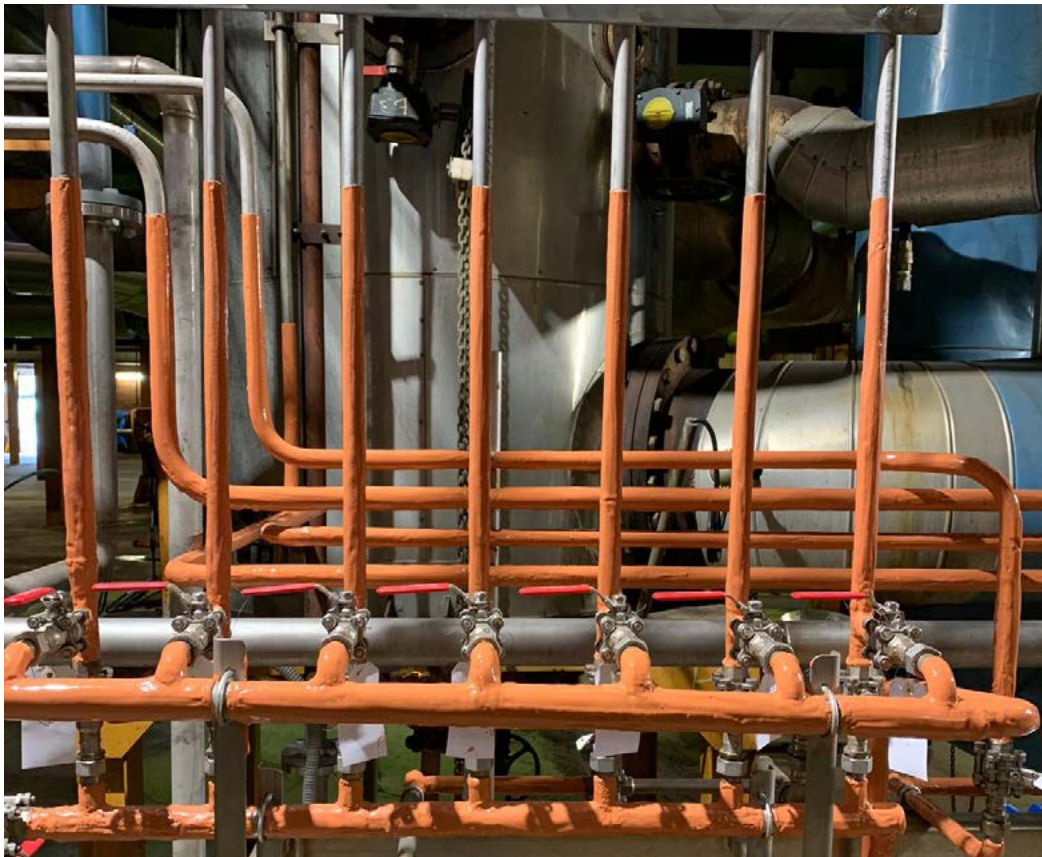
- The liquid waterproof membrane Belzona 3III (Flexible Membrane), has been certified by Energy Star and ETA-Danmark (European Technical Assessment) and has proved to provide excellent protection of roofs for in excess of 25 years.
- Belzona 587I, a ‘cool-to-touch’ thermal insulation barrier, reduces the amount of heat transfer through a surface, increasing the efficiency of equipment.
- For immediate leak sealing, fast-curing materials such as the repair composite Belzona I22I (Super E-Metal), and epoxy paste Belzona I2I2, are ideal for emergency repair situations.
- High strength, epoxy concrete repair products such as the epoxy repair composite Belzona 4III (Magma-Quartz), can quickly restore secondary containment areas and damaged concrete whilst providing excellent chemical and impact resistance, as well as compressive strength.

Mitigating carbon steel intensity

Another way to illustrate the carbon mitigation potential of polymeric materials is by considering the carbon footprint of steel. According to an article by Carbon Clean in 2021, for every ton of steel that is produced, nearly double the amount, 1.85 tons of CO₂, is released back into the atmosphere. To put this into perspective, this means that if steel was a nation, it would be the fifth largest producer of carbon emissions in the world.



← Belzona 572I provides leading edge protection on a wind turbine blade



← Thermal insulation barrier Belzona 587I, increases the efficiency of equipment

By investing in repair and protection systems that are specially developed for application onto metal substrates, such as the two-part epoxy repair paste Belzona IIII (Super Metal), asset owners can extend the lifespan of their steel assets.

In doing so, this significantly decreases the amount of steel that needs to be purchased. Not only will this help to mitigate the carbon intensity of steel, but it also enables asset owners to make considerable financial savings.

Safeguarding renewable energy assets

While the CAT report identified many areas that need urgent improvement, it also identified some positive areas of progress. It said: "In 2020, renewables reached a new all-time record, generating 29 per cent of the world's electricity (IEA 2021d)."

The report goes on to say how renewable sources of power, including hydropower, biofuels and wind, amongst others, are now the "generation technologies of choice, accounting for 82 per cent of new capacity installed in 2020."

In regards to the future growth of these technologies, the report said: "Decarbonisation will be achieved by increasing the share of renewables, particularly wind and solar, in electricity generation." More specifically, it outlines the objective to "Increase the share of renewables in electricity generation to 55-90% by 2030 and to 98-100% by 2050."

→ Penstock coated with anti-corrosion coating Belzona 58II



→ Kaplan turbine blades protected with Belzona I3II, I34I and 2I4I



Considering the ongoing success and necessary future growth of these types of renewable energy technologies, it is important that investments are made into protecting vital assets. This can be achieved through the investment of polymeric repair materials and industrial coatings.

Examples of polymeric systems include:

- The reconstructive composite material Belzona 572I has been specially developed to repair leading edge damage on wind turbines. Thanks to the system's low-temperature cure, as low as 5°C/41°F, this ensures the turbines have a fast return to service.
- To repair damaged wind turbine shafts, the ceramic epoxy coating Belzona I32I (Ceramic S-Metal) can be deployed. This solvent-free coating provides excellent erosion and corrosion resistance to metal surfaces.
- For hydropower applications – for areas that are particularly subjected to high levels of cavitation such as Kaplan turbine blades, Belzona 2I4I (ACR-Fluid Elastomer) can be deployed. This two-part polyurethane resin offers an outstanding level of protection against cavitation at ultra-high velocities (up to 115 knots with no damage).
- Suitable for both metallic substrates such as the external areas of penstocks as well as concrete substrates, Belzona 58II (Immersion Grade) can offer excellent corrosion protection.

R&D development

Another way in which polymeric technology can help industries to achieve better carbon intensity reductions is through the composition of the products themselves.

The Belzona Research and Development Team is currently in the process of formulating products made from bio-based materials that are produced from sustainable plant-based feedstocks, rather than the traditional fossil fuel-based ingredients.

With their high levels of renewable carbon content, this new line of greener, more environmentally-friendly products gives asset owners a further opportunity to offset the environmental impact of their operations.

A welcome addition to the arsenal

For these reasons, an increase in investment into industrial coatings and repair composites would help countries in the process of ratcheting up their 2030 emissions reduction plans to achieve the net-zero emissions by the 2050 target. Not only this, but as discussed, these technologies are also instrumental in helping asset owners across many different industries to make significant financial savings as well.

Indeed, Belzona recognises the critical role polymeric systems play in helping to support a more sustainable future for the planet in a way that is also financially advantageous. As such, the company is committed to making ongoing investments into the development of polymeric systems that meet the ever-growing and changing demands of industries as they evolve towards a net-zero future. ■

“ Belzona recognises the critical role polymeric systems play in helping to support a more sustainable future for the planet in a way that is also financially advantageous. ”

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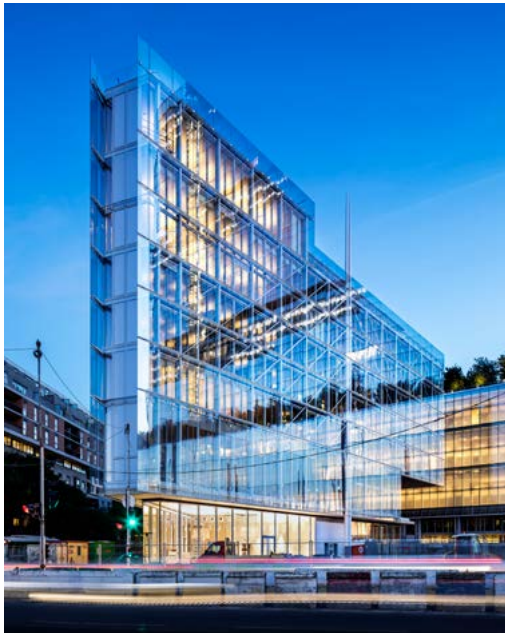
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ICONIC Maison de l'Ordre des Avocats FIRE PROTECTION

Hempel provides proven passive fire protection for a steel-framed building.



With a glass façade symbolising the transparency of justice and a glossy metal exoskeleton, the new Maison de l'Ordre des Avocats (House of the Paris Bar Association) is a stunning addition to the French capital's new Batignolles judicial city. For the building owner, safety is a top priority. Therefore, the exoskeleton needed a proven passive fire protection coating that would enable the steel to maintain its load-bearing capacity for up to 60 minutes during a fire, giving those inside valuable extra time to evacuate.

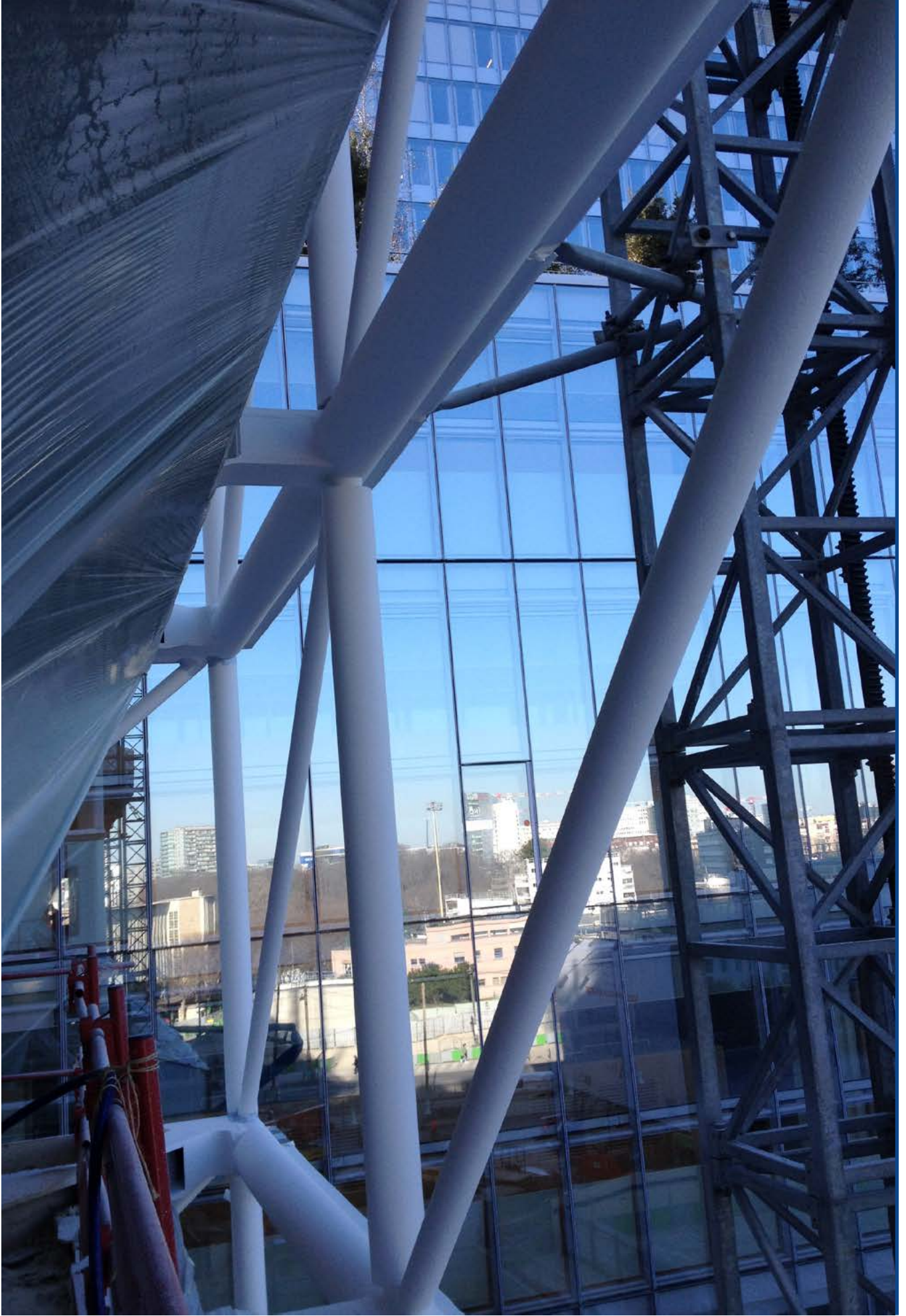
The challenge

Specialist paint application and surface treatment company Roth & Cie was contracted to apply the passive fire protection coating system. Roth & Cie had worked with Hempel for many years and was keen to work again with the coating manufacturer on this project. However, due to the project schedule, the tubular exoskeleton framework was delivered to the construction site with a competitor's epoxy primer already applied.

Roth & Cie therefore wanted a Hempel passive fire protection system that would work with the existing primer. Also, as building aesthetics are important in the overall design, the exoskeleton needed a high-quality matt satin finish.

The solution

Hempel's solution was to specify a system of Hempafire Pro 315 and Hemplathane 55750. A single-component intumescent coating, Hempafire Pro 315 complies with the EN 13501-2 standard for the fire classification of construction products. It is optimised to provide 60 minutes of passive fire protection, as well as partial protection up to 90 minutes. In addition, thanks to its exceptionally low loadings, Hempafire Pro 315 requires significantly lower dry film thicknesses than competitor products. As a result, Roth & Cie could apply the coating in a thinner coat, significantly reducing paint consumption, application time and project costs.





The full system was completed with Hemplathane 55750, a polyurethane topcoat with quick crosslinking properties that provided the matt satin appearance required by the specification.

Hempel's dedicated passive fire protection R&D centre in Barcelona, Spain verified that Hemplafire Pro 315 could be applied on top of the existing primer. The entire system was spray applied using an electric airless pump, which is ideal for construction sites as it does not require an air compressor.

The project is just another in a long line of successful collaborations with Roth & Cie, which also includes previous passive fire protection coating projects, most notably La Halle Secrétan covered market and La Samaritaine department store, both in Paris.

Other Hemplafire coating projects have included Norway's Jordal Amfi Ice Hockey Stadium, Norway in 2020, The Arena Center Kaarela, in Finland in 2021, and more recently, Sandwell Aquatics Centre in the UK, which has been built for the 2022 Commonwealth Games. ■

At a glance
Building: Maison de l'Ordre des Avocats (House of the Paris Bar Association).
Customer: Roth & Cie.
System: Hemplafire Pro 315 + Hemplathane 55750.
Volume: 4,080 litres.







GREEN FIRE PROTECTION

Piotr Mędrek, PPG Regional Account Manager, Protective & Marine Coatings, explains how PPG Steelguard 65l waterborne fire protection coatings provided a green solution for LG Chem's battery plant in Poland.





LG Chem, headquartered in Seoul, South Korea, is one of the world's leading chemical groups, with a business portfolio that includes petrochemicals, energy solutions, advanced materials, and life sciences. The company is also a major producer of lithium ion batteries for electric vehicles, and recently set up a battery 'giga-factory' in Wroclaw, Poland.

The Wroclaw facility is the first and, currently, the only fully integrated plant in Europe to produce all battery components, ranging from electrodes to cells, modules and final packs. For the factory's steel structure, LG was looking for a 'green' passive fire protection (PFP) system – using a solvent-borne system in such quantities may have caused an environment, health and safety (EHS) issue.

There were several additional challenges for the project : because of the building schedule, application of the coating system had to be possible in winter and spring, and variable deliveries and quantities of paint were required to meet the complex construction schedule.

A project of this size attracted a large number of bids – as PPG has a wide range of coating systems, we were able to propose both a solvent-borne and also a waterborne PFP solution. In fact, the owner of the plant had previously specified a competitor's solvent-borne product. But as LG Chem was looking for a 'green' option, our team convinced the customer to switch to our waterborne PPG Steelguard 65I PFP solution.

PPG Steelguard 65I is the company's first waterborne PFP coating that can provide up to

120 minutes of protection from cellulosic fire and covers a wide range of temperatures from 350°C to 750°C. It offers competitive thicknesses across the full spectrum of fire ratings from 15 up to 120 minutes. It is a one-component product so it is easy to apply on-site, and is dry to touch within two hours at 20°C (68°F).

The company was able to solve the problem of difficult application conditions on-site during winter through a close collaboration with the applicator, M+M.

Cooperation beats the cold

It would have been unimaginable to apply coatings on a project of this scope and size on-site in Poland during winter just a few years ago. But thanks to our long-term relationship, we helped M+M by providing the essential technical and application advice of how to correctly prepare the painting site during winter for waterborne product application. In addition, close cooperation with the applicator generated efficient paint application in a range of challenging climatic conditions.

In all, more than 150,000 litres of coatings were delivered over five months in various quantities, often at short notice, on schedule and with no delays.

From the outset, our proactive approach benefited both the customer and the applicator, and ensured that the LG Chem electric vehicle battery plant project progressed as smoothly as possible. As a result, the application went perfectly with the support of our sales and technical teams. ■

Project	Fire protection system for LG battery plant in Poland
Challenge	A 'green' cellulosic passive fire protection (PFP) coating solution for a giga-factory suitable for application in winter and spring.
Coatings system	PPG Steelguard 65I cellulosic waterborne passive fire protection coating.
Benefits	Low VOC and high-volume solids. Up to 120 minutes' fire protection covering temperatures from 350°C to 750°C. Easy to apply on-site – one component product. Dry to touch within two hours at 20°C (68°F). Can be applied up to 700µm (28 mils) DFT in a single coat. Fully tested for all conventional profiles. Meets the latest standards (including EN 13381-8:2013 and BS476 Parts 20/21). Meets ISO 12944-2 C1* and C2 internal corrosivity categories and EAD 350402-00-II06 Z2*, ZI and Y environmental conditions. *no topcoat required

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SPOTLIGHT

ENSURED RELIABILITY & AESTHETICS

Robust and long-lasting, DAF trucks are renowned worldwide for their reliability and high performance. A small part of this reputation is down to Hempel's waterborne Beltidra 2C Topcoat, which protects the trucks' chassis and axles from the environment.



DAF Trucks NV is a technology company and one of Europe's premier commercial vehicle manufacturers. Its light, medium and heavy-duty trucks offer second-to-none reliability and fuel economy – and the company is committed to driving down emissions throughout the road transport industry.

Chassis and axles take more punishment than any other part of a truck. Close to the road, they are exposed to almost continual impact from stone chippings – and a scratch in the paintwork may lead to corrosion.

To protect these parts in all weathers and driving conditions, they need a high-performance coating system that can withstand even the harshest treatment and most extreme temperature fluctuations.

The Netherlands-based DAF Trucks has been using Hempel's coatings for over 30 years to ensure its vehicles remain attractive and corrosion-free for their entire service life. A key coating on each truck is Beltidra 2C Topcoat.

A waterborne polyurethane coating, the

Beltidra 2C Topcoat cures very quickly. Once applied, it ensures a smooth and glossy surface that's highly resistant to impacts and abrasion. The coating also has the lowest co-solvent content in its class, an important consideration for DAF, which is determined to lead the industry towards cleaner and greener road transport.

The challenge

During operation, truck chassis and axles are exposed to a wide range of corrosive conditions, from high heat and extreme cold to corrosive engine oils and impact from loose stone chippings and other road debris.

DAF trucks are renowned for their reliability. Therefore, DAF needs a high-performance coating system to protect these parts from whatever the road throws at them. At the same time, DAF is keen to reduce its impact on the environment, and so needs a waterborne coating system that will reduce emissions during application. Finally, the coating system needs to be easy to apply and fast curing to

ensure DAF's high-tech production line keeps moving quickly.

The solution

DAF has been using Hempel's coatings for over 30 years, and in that time Hempel has worked closely with DAF to co-develop various products to suit their production line setup, desired application properties and finished quality requirements.

Beltidra 2C Topcoat is a result of this collaboration. A waterborne polyurethane coating, Beltidra 2C Topcoat is the perfect choice for chassis, axles or heavy-duty trailers. It ensures high chemical resistance and excellent resistance to scratches from stone chippings and other debris.

Designed for fast application, it can be applied with different application techniques, airless spray or airmix and cures in just 30 minutes at 60°C. It also has a co-solvent content of less than 65 grams per litre, the lowest in its class, which keeps production line emissions down.

For DAF, a key benefit of Beltidra 2C Topcoat is its flexibility. It can be used combined with the Beltidra primer in a two-coat system. It can also be applied on a wide range of substrates, including e-coated parts, powder coated parts, epoxy and alkyd primers. It gives all substrates the same glossy colour finish, which has enabled DAF to reduce its stock levels and coating complexity. ■

At a glance

Customer: DAF Trucks NV is a technology company and the premier commercial vehicle manufacturer in Europe, with production facilities in the Netherlands, Belgium and the UK. DAF is a wholly-owned subsidiary of Paccar Inc, a worldwide quality leader in the design and manufacturing of premium light, medium and heavy-duty commercial vehicles.

Coating system:

Primer: e-coat, Beltidra primer and other substrates

Topcoat: Beltidra 2C Topcoat.



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SWISS AeroSHARK UPGRADE







SWISS has decided to equip its entire Boeing long-haul fleet with the fuel-saving AeroSHARK surface technology.

Starting in the middle of the year, a total of 12 Boeing 777-300ERs will gradually be fitted with the riblet films developed jointly by Lufthansa Technik and BASF. The significantly reduced frictional resistance resulting from this modification will make the sub-fleet more than one per cent more fuel-efficient and lower in emissions.

Swiss International Air Lines (SWISS) is the first passenger airline worldwide to use the innovative surface technology to significantly reduce fuel consumption and emissions on one of its existing fleets, thereby improving both economy and ecology. With approximately 950m² of riblet film, the modification of the 'long' Boeing 777-300ER will be even larger than the 800m² on the Boeing 777F of AeroSHARK's launch customer Lufthansa Cargo. The potential for fuel and CO₂ savings on this scale is around 1.1 per cent. Converted to the operational profile of the Boeing 777-

300ER at SWISS, this means annual savings of more than 4,800 tons of kerosene and roughly 15,200 tons of carbon dioxide, as much as is usually generated on approximately 87 long-haul flights from Zurich to Mumbai.

"Reducing our environmental footprint is one of the biggest challenges facing the aviation industry, and becoming carbon-neutral by 2050 is an important strategic goal for SWISS," says Dieter Vranckx, Chief Executive Officer of SWISS. "We are keen to actively promote and invest in the use of new technologies. We are pleased to be the world's first passenger airline to offer the innovative AeroSHARK technology on our Boeing 777 fleet, making another important contribution to more sustainable air travel in the future."

Reduced environmental footprint

"Due to the long lifecycles in our industry, we cannot only rely on new aircraft generations to reduce our environmental footprint, but also need to specifically optimise existing fleets towards sustainability," explains Dr Johannes Bussmann, Chief Executive Officer of Lufthansa Technik. "AeroSHARK makes a significant



contribution to this, and I am very pleased that SWISS is leading the way."

"In developing our Novaflex Sharkskin surfaces, the focus was on a robust yet functional solution that meets the stringent requirements of aviation and also helps our customers achieve their sustainability goals," says Uta Holzenkamp, head of BASF's Coatings division and as such also responsible for functional films. "The fact that SWISS is convinced by our solution shows that economic action and sustainability go hand in hand."

SWISS will install AeroSHARK on its Boeing 777-300ER fleet successively from mid-2022 during suitable maintenance layovers. The airline had already supported Lufthansa Technik and BASF during the development phase of AeroSHARK: In the summer of 2021, a Boeing 777 wing was precisely measured for the entire duration of a regularly scheduled flight between Zurich and San Francisco. With the data collected, Lufthansa Technik was subsequently able to create highly accurate 3D models for flow simulations, on the basis of which the AeroSHARK modification is to be extended to the wings of the Boeing 777 in the

near future in order to realise further savings potential. SWISS will also provide one of its aircraft for the so-called STC flight to obtain the required Supplemental Type Certificate from the European Union Aviation Safety Agency (EASA).

AeroSHARK technology

AeroSHARK is a surface technology developed jointly by Lufthansa Technik and BASF that consists of ribs around 50 micrometres in size – known as riblets. It specifically imitates the properties of sharkskin, which has particularly favourable flow characteristics, and thus optimises aerodynamics at relevant points on the aircraft. As a result, less fuel is needed overall. Lufthansa Technik and BASF intend to systematically develop the new technology further in the direction of additional aircraft types and even larger surfaces, so that in the future they will be able to provide airlines around the world with even more extensive support in achieving their emissions targets. In initial model calculations, the sharkskin technology in its maximum expansion stage could even cut CO₂ emissions up to 3%. ■



IN FOCUS

LUXURY VISION

Nor-Maali delivers coatings and technical support to Costa Toscana.



→ Coating Advisor Sara Grundsten-Lyapova works as Nor-Maali Oy's inspector and advisor at Meyer Turku shipyard



Meyer Turku Shipyard handed over the Costa Toscana luxury cruiseship to Costa Cruises in December last year. The ship was completed on time despite Covid-19.

Steel surface coatings were supplied by Nor-Maali Oy together with Jotun. The products used included Jotamastic 90, Hardtop AX, Chemflake Special and Baltoflake.

Costa Toscana is the second cruiseship ordered from Meyer Turku by Costa Cruises. Her sistership, the Costa Smeralda, was completed in 2019. Costa Toscana headed to the Mediterranean from where the first cruise began in early March. The luxury cruiseship will operate year-round in the western Mediterranean.

Environmentally friendly

Costa Toscana uses a number of technologies to reduce its environmental impact. These include using LNG as fuel, which doesn't emit sulfur dioxide or fine particulate emissions. Nitrogen oxide and carbon dioxide emissions will also be significantly reduced. Energy consumption is minimised by the ship's hull shape and the energy efficiency systems.

This new vessel is a tribute to the Italian province of Tuscany, which is reflected both in the name of the ship and in the public areas. The ship has a spa, themed bars, 21 restaurants and entertainment areas showcasing Italian style.

Coatings from Nor-Maali Oy

The steel surface coatings were supplied by Nor-Maali Oy together with Jotun, which is one of the world's largest manufacturers of marine

coatings. Construction of the ship began in the summer of 2019 using the yard's own block production combined with the block production from subcontracting partners. This saw Nor-Maali Oy deliver coatings and providing technical support to several countries.

Costa Toscana's steel surfaces have been coated with premium products such as the epoxy mastic coating Jotamastic 90 and the aliphatic acrylic polyurethane topcoat Hardtop AX. These products were used in several areas across the ship. At some sites, Jotamastic 90 was used as a single coat.

In addition to the main products, other products were used for special areas. For example, the chemical resistant glassflake-reinforced vinyl ester coating Chemflake Special was used in the bioreactor, waste water mixing and bio sludge tanks. It is specially recommended for areas subject to extreme chemical exposure and mechanical wear and where future maintenance is challenging. In the case of the bioreactor, waste water mixing and bio sludge tanks in Costa Toscana, Chemflake Special protects structures from the very aggressive environmental conditions when the waste forms, e.g. hydrogen sulfide and free fatty acids.

The deck of the in-service corridor and outside provision store were coated with glassflake-reinforced Baltoflake, an unsaturated polyester coating. The vessel's service corridors and storage facilities are exposed to constant truck and pump cart traffic, so a coating that can withstand very severe mechanical stress is needed. Baltoflake is recommended for areas subject to extreme mechanical wear and harsh exposure conditions and where future maintenance is challenging (e.g. offshore zones and buried tanks).

Technical support and inspection

An important part of the painting work on the steel surfaces of the cruiseship is the technical support and inspection work provided by the paint supplier. The inspection work ensures, in cooperation with other parties, that the agreed quality objectives are achieved. Coating Advisor Sara Grundsten-Lyapova works as Nor-Maali Oy's inspector and advisor at Meyer Turku shipyard.

In the case of Costa Toscana, the inspection work took more than two years. Surface treatment began as soon as the first block was built and continued until the ship was



completed. Thousands of inspections were carried out during the construction of the ship.

With new construction, the surfaces to be painted will be inspected several times during the painting work. The first inspection is performed on the pre-treated surface. The degree of pre-treatment must be in accordance with the specification and the surface must be dust-free and clean. The surface quality is compared with the standard and it is decided whether it passes the quality requirement. If the pre-treated surface passes the inspection, painting can begin.

The painted surface is inspected after each painting. Film thicknesses are measured and the surface is also visually inspected. Things to consider include smoothness of the film, possible sagging and dry dust deposited on the surface. Inspections usually involve representatives from the shipping company, the shipyard, the paint supplier and the contractor. All inspection results are documented and the surfaces are photographed.

In addition to inspection work, Grundsten-Lyapova's job description also includes

providing technical support. Almost daily, she discusses issues relating to the products and environmental conditions with both the contractor and the shipyard staff. In addition, if necessary she will obtain further information on emerging topics from Nor-Maali's technical service or Jotun.

Meyer's Turku shipyard is currently building Carnival Corporation's Carnival Celebration, which will be completed later this year, and Royal Caribbean International's Icon of the Seas, which will be completed next year. This will be followed by the construction of TUI's Mein Schiff 7. ■

Costa Toscana

GT: 185,000
Length: 337m
Width: 42m
Decks: 17
Passengers: ~6,730
Passenger cabins: 2,663
Crew: 1646
Speed: 17 knots



NO TIME TO WASTE

The smooth silicone coating and biofouling-prevention properties found in Hempaguard X7 reduce the drag on vessel hulls. *By Mads Raun Bertelsen, Marine Solutions Director, Hempel*



The first month of 2022 has revealed a positive outlook for the global drydock industry. Yards are seeing a strong start to the year as cruise operators ready their vessels for post-pandemic business- as-usual operations. Reports from yards also suggest that other vessel types are making their way to drydocks for upgrades and maintenance. Despite the restrictions and difficulties of the past 20 months, ships still need to be maintained.

For shipowners, drydocking is an inevitable and considerable expense during the lifetime of an asset. When a ship's coating is renewed – usually every five years – it represents a significant outlay for the owner.

It's not a false economy however, and industry is waking up to the opportunities that a well-maintained hull with a professionally applied high-end coating can bring to its operations.

The international GloMEEP project, which is being executed through the International Maritime Organization (IMO), says on its website that 'there is no doubt a possible saving by applying high-end products. In combination with good hull condition monitoring and maintenance, savings will be achieved. The benefit from this measure will come in terms of reduced fuel consumption and thus a lower fuel cost.'

Further studies support this GloMEEP statement. Hempel's involvement in the 2020 Green Ship of the Future study revealed that if Hempel underwater hull coatings were applied on two of the reference vessels, a RoPax ferry and a medium range tanker, the two ships combined would potentially have saved 4,182 tonnes in fuel and reduced CO₂ emissions by 13,000 tonnes over a three-year period.

Hempel can validate these statistics in real terms when it looks to data drawn from across the more than 2,000 vessels, from bulk carriers to large containerships, that have been coated in Hempaguard X7 since the product was launched almost nine years ago. Collectively, these vessels have saved their operators EUR 1.76 billion (\$1.96 billion) by reducing fuel consumption by 7.6 million tonnes and cutting CO₂ emissions by 23.5 million tonnes*.

Hempaguard X7

Hempaguard X7 is a very smooth silicone coating with non-stick properties that significantly reduces biofouling on a vessel's hull. Its antifouling properties are released when biocide-activated hydrogel forms on the surface of the silicone coating. The biocide becomes trapped in a layer of hydrogel on the surface of the coating where it is of most use to repel organisms. This makes it more effective than standard coatings whilst using 95% less biocide.

This in itself is an environmental advantage as it results in less biocide being introduced into the marine environment. Further, the low amount of biocide ensures that the coating is very smooth after application, reducing friction and increasing ease of movement through the water. As such, vessels with Hempaguard X7 experience an extremely low average speed loss down to 1.4 per cent irrespective of a vessel's trading pattern.

Furthermore, it is suitable for vessels operating with long service intervals of up to 90 months and very long idle periods of up to 120 days. It can also be easily applied in warmer temperatures or as cold as zero degrees (32°F), and works instantly on contact with water.

Emissions reducer

One early adopter of Hempaguard X7 was the bulk shipping provider Spar Shipping, which applied Hempaguard X7 to one of its vessels in a trial application in 2013. The Norwegian-based company operates 24 vessels, ranging from 53,000 to 64,000dwt, and given the nature of the bulk cargo tramp trade, needed a coating that would serve its vessels in waters of all temperatures at a variety of speeds and even allow for idle periods.

Spar Shipping found during Hempel trials that the application of Hempaguard X7 consistently reduced fuel consumption and emissions. When the time came for six other vessels in its fleet to be re-coated it looked to the same product.

The 2010-built, 58,000dwt Spar Mira was first of these six to leave the drydock with a new coating, and over 2020 and 2021, five further Spar tankers followed.

Spar Shipping has found that Hempaguard X7 consistently and significantly reduces fuel consumption and associated emissions, even when vessels are traded slowly, operating in fouling-aggressive waters, or standing idle for long periods.

Emission reduction targets

Shipping's carbon emission targets call for a reduction of greenhouse gases (GHGs) by at least 50% by 2050 compared to 2008, and for at least a 40% reduction in the carbon intensity of international shipping by 2030 relative to 2008.

To achieve these goals, owners and operators need to look to every aspect of a ship's operations to reduce emissions and increase their performance. The International Maritime Organization's (IMO) GHG strategy aims to reach these targets through mechanisms such as the Energy Efficiency Existing Ship Index (EEXI), which scores vessels for their efficiency. The IMO is calling on ports and other stakeholders to offer incentives to the owners/operators of higher scoring ships, and hull efficiency can affect the overall EEXI score.

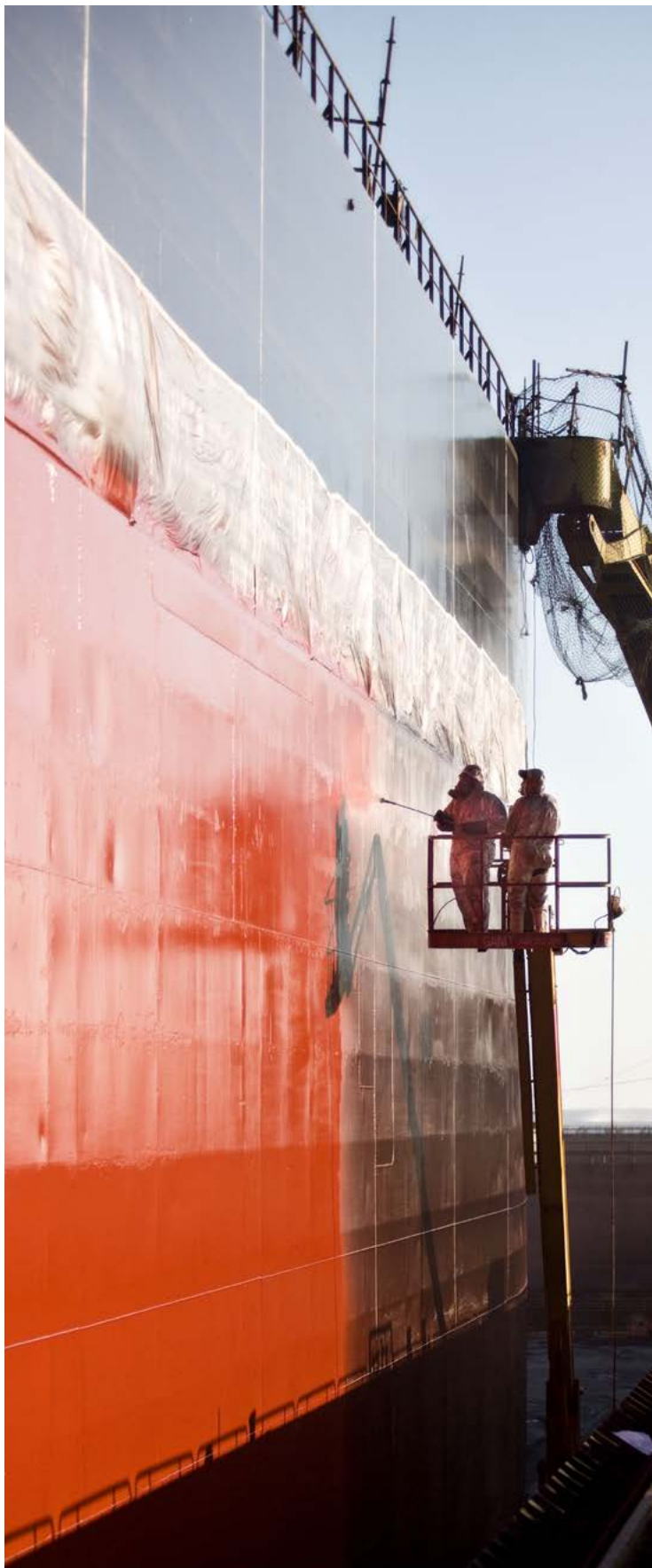
A recent decision to revise the GHG strategy could lead to the more challenging target of achieving net-zero carbon emissions by 2050. There is no time to waste.

Driven by our own aspirations as well as our customers', Hempel is constantly reviewing its commitments to the environment. As a company, we will be carbon neutral in our own operations by 2025 and we have committed to set science-based targets in our value chain in accordance with the 1.5°C pathway. We are one of only 300 companies worldwide to make this commitment.

We have also set ourselves the challenge of reducing customer CO₂ emissions by at least 30 million tonnes by 2025. We will achieve this through a renewed focus on sustainability in our technology research programmes and our innovation incubator. With these goals we will future-proof our industry and support our customers' ambitions to operate their vessels in a low- no- carbon shipping environment.

* Calculation method

The savings related to the 2,000 vessel applications have been calculated by evaluating each vessel individually. For each ship coated with Hempaguard X7, Hempel estimated the actual yearly consumption using numbers from the Fourth IMO GHG Study 2020. The IMO consumption estimates are based on voyage data for all ships and consist of yearly averages divided into ship types. ■



GREAT ICE PERFORMANCE

PPG explains how its Sigmashield I200 hull coating and Sigmaguard 720 tank coatings provided great protection inside and out for the world's first icebreaking LNG tanker.

Dynacom Tankers Management Ltd, a shipping company based in Athens, has a strong presence in the oil industry, managing vessels with a total capacity of over 8.5 million tons calling at more than 1,000 ports worldwide. The company has significantly

expanded and modernised its fleet in recent years, and in 2018 commissioned the world's first icebreaking LNG tanker, the Boris Sokolov.

The vessel, built in the Guangzhou shipyard in China, is based on the Double Acting Ship (DAS) principle, which allows tankers and cargo ships



to operate independently without icebreaker assistance in challenging ice conditions.

Dynacom needed a robust, heavy-duty system to provide protection for two distinct conditions. As the vessel would frequently be using the Northern Sea Route, the hull coating had to be resilient enough to withstand tough, icy conditions with excellent abrasion and impact resistance. It would also be carrying chemical cargoes, so required a tank system with optimal resistance for a wide range of chemical cargoes.

Application

After analysing the customer's requirements, PPG recommended a combination of PPG Sigmashield I200 solvent-free, amine-cured phenolic epoxy coating for the hull and Sigmaguard 720 reinforced high-solids tank coating.

PPG Sigmashield I200 is built on a highly cross-linked phenolic epoxy technology, which provides damage propagation control with outstanding anti-abrasion properties. This feature extends the service life of the coating by greatly increasing the creep resistance. It also offers single-coat application using standard equipment and does not generate any VOC emissions, providing an additional benefit to applicators.

PPG Sigmaguard 720 tank coating, which has a track record of over 30 years in the maritime industry, provides good chemical and solvent resistance for crude and refined products and chemicals. The coating's high-solids composition makes it economical to use, including short curing periods and excellent low-temperature curing, while its high-gloss finish reduces cleaning and turnaround time.

Inspection

The vessel was drydocked in October 2021 at the Fayard shipyard, Denmark after its three-year operation in harsh environments and ice-going routes. Following inspection, Dynacom was very satisfied by the PPG Sigmashield I200 hull coating's performance and said: "Its single-layer application and fast curing time also saved a great deal of time and money during the drydock stage. The vessel's cargo tanks were surveyed and found to be in excellent condition without any visible breakdown in the PPG Sigmaguard 720 coating. The vessel will continue to benefit from the coating's maximum chemical protection and resistance, resulting in long-term benefits and cost reduction, and operational efficiency within the market." ■

Project	Coatings system for the Boris Sokolov LNG icebreaker
Challenge	A hull coating that can withstand tough, icy conditions with excellent abrasion and impact resistance. A tank lining system with optimal resistance for a wide range of bulk cargoes.
Coatings system	PPG Sigmashield I200 hull coating Sigmaguard 720 reinforced high-solids tank coating
Benefits	▪ Excellent impact- and abrasion resistance, cathodic protection and creep resistance ▪ Good application properties; also possible in winter conditions ▪ Single-coat application using standard equipment ▪ Easy maintenance and repair ▪ Recognised by Lloyd's Register and Aker for use in icebreaking conditions PPG Sigmaguard 720 ▪ Good chemical resistance against a wide range of chemicals ▪ Short curing periods ▪ Excellent low-temperature curing ▪ Easy to clean ▪ Meets the requirements of EI I54I, section 2.2 (coating systems for aviation fuel storage tanks and pipes)



CRYSTAL CLEAR VISION

How Intersleek II00SR is helping
a ferry operator go green and
drive down costs.





Preserving the crystal clear waters of the Aegean Sea for future generations is a responsibility that Attica Group takes seriously. The largest passenger shipping group in Greece, the third in the Mediterranean Sea and among the 10 largest in Europe, Attica Group operates 30 vessels in the Eastern Mediterranean Sea and two on the Morocco-Spain lines, carrying 3.3 million travellers a year.

Committed to applying “environmentally friendlier business practices, in order to reduce its environmental impacts”, it required a hull coating solution for its ferries that would not only help it fulfil that ambition – but also offer stand-out operational efficiencies as well. They found it in Intersleek II00SR from International.

International claims “it is the only fluoropolymer foul-release coating on the market that is entirely biocide-free – setting new standards in environmental performance.” Its patented slime-release technology helps

vessels achieve reduced drag, improved fuel efficiency and reduced CO₂ emissions.

At the same time, it provides operators with a speed loss of less than 1% over a docking cycle, as well as lasting beyond 10 years without being recoated – offering stand-out savings in costs and time.

Application

Intersleek II00SR was applied to four RoRo vessels in the Attica Group fleet after a successful trial on the vessels Blue Star Patmos, Blue Star Naxos, Superfast I, Superfast II and Superfast XI, the Superfast vessels operating between Greece and Italy.

In total, 22,000 litres of coatings were applied during the drydocking of Blue Star Delos, Blue Star I, Blue Star 2 and Blue Star Paros in Nafsi Shipyard in Greece between January and May 2021. Of this, 9,000 litres were Intersleek II00SR. The process also saw the underwater



hulls fully blasted and coatings upgraded with Intershield 300 anti-corrosive primer.

"Marine operators face an ongoing challenge of balancing increasing environmental responsibilities with keeping operating costs down," says AkzoNobel Marine Marketing Manager Christopher Birkert. "At AkzoNobel, we're committed to supporting the industry to not only meet the highest of sustainability standards but also move the dial in terms of savings. As the highest performance biocide-free scheme in the market, Intersleek IIOOSR is precision-engineered to help operators meet IMO targets of driving down CO₂ emissions while not adding any toxic materials to the environment."

Proven advantages

"It is proven to reduce paint consumption by 77%, VOC by 86% and decrease CO₂ emissions by up to 110,000 tonnes over multiple operation

cycles, compared to biocidal SPC technology," explains Birkert. "By being fully cleanable in service it also eliminates docking costs, with material removed able to be recycled and safely disposed of at anchor."

"Our vessels take millions of passengers a year to destinations all across the Eastern Mediterranean and beyond, so we require underwater hull coatings that can be relied on to perform day-in and day-out," explains Attica Group Deck Superintendent Makis Tsourouflis. "Intersleek IIOOSR has already delivered outstanding macro and micro fouling control on the vessels in our fleet that it was previously applied on, so we had no hesitation in choosing it when the time came to recoat a further four ships. At Attica Group we take our environmental responsibilities incredibly seriously – and by using Intersleek IIOOSR we can drive down CO₂ emissions in service – helping us on our sustainability journey." ■

NEW FASTAR APPLICATION

COSCO Shipping has indicated it will coat its entire fleet of VLCCs with Nippon Paint Marine's new antifouling system Fastar once initial applications have been evaluated.

The hulls of the passenger ferry COSCO Star and the 56,000dwt bulk carrier Xin Liu Lin Hai will each be coated with the game-changing antifouling at drydockings scheduled for later this year.

The COSCO Star was docked at the COSCO Shanghai Dockyard in February for a Fastar XI application, with the bulker currently scheduled to take the Fastar I version in May, at the COSCO Guangzhou Dockyard.

The shipowner selected the novel nano resin-containing paint – introduced to the market early last year – to help vessels meet the Energy Efficiency Existing Ship Index (EEXI) requirements. The amendment to MARPOL Annex VI, which requires all vessels above 400gt to measure their energy efficiency, enters into force in January 2023.

"COSCO Shipping has a long history of applying Nippon Paint Marine antifouling to the hulls of its vessels as a way of improving propulsion efficiency and reducing emissions," explains Jun Ye, M&R Sales Director, Nippon Paint Marine (China). "Once the shipowner has verified the precise, predictable performance of Fastar on these two vessels, more vessels are expected to take advantage of this revolutionary coating system."

COSCO Shipping says: "We were keen to evaluate and assess the feasibility of Nippon Paint's next generation antifouling for possible

VLCC application. The coating's potential to reduce fuel consumption and carbon emissions by up to 8% is attractive and seen as a viable way towards meeting EEXI requirements. We also anticipate that reduced paint volumes and quick drying time will result in cost savings."

Real headache

"With the current high freight rates, shipowners want to keep their vessels trading for as long as possible," says Ye. "Fastar antifouling not only provides next-level performance but improves drydock efficiency, reducing significantly the time required in drydock for paint work."

Fastar will also be hugely beneficial for repair yards. "As there is not enough capacity to meet current demand, yards are limiting the number of days for each drydocking as a way of increasing the number of projects they can take on," he explains. "Drydock locations are no longer set in stone due to the delays at some Chinese yards, especially in Zhoushan and Ningbo. Rather than wait for a slot shipowners are moving their ships elsewhere. It's a real headache for coatings suppliers."

According to Nippon Paint Marine, despite some market retraction last year, orders for the new coating increased steadily, with 135,000 litres of the coating having been applied to hulls totalling 4.2Mdw.

Fastar is a self-polishing antifouling coating that incorporates a unique nano-domain resin structure designed to minimise the effect that seawater temperatures, vessel speeds and other external factors have on coating performance.

Nippon Paint Marine's 4th generation antifouling system is available in two main versions – Fastar I and Fastar XI – the latter of which incorporates the company's patented hydrogel technology. ■

“COSCO Shipping has a long history of applying Nippon Paint Marine antifouling to the hulls of its vessels as a way of improving propulsion efficiency and reducing emissions.”

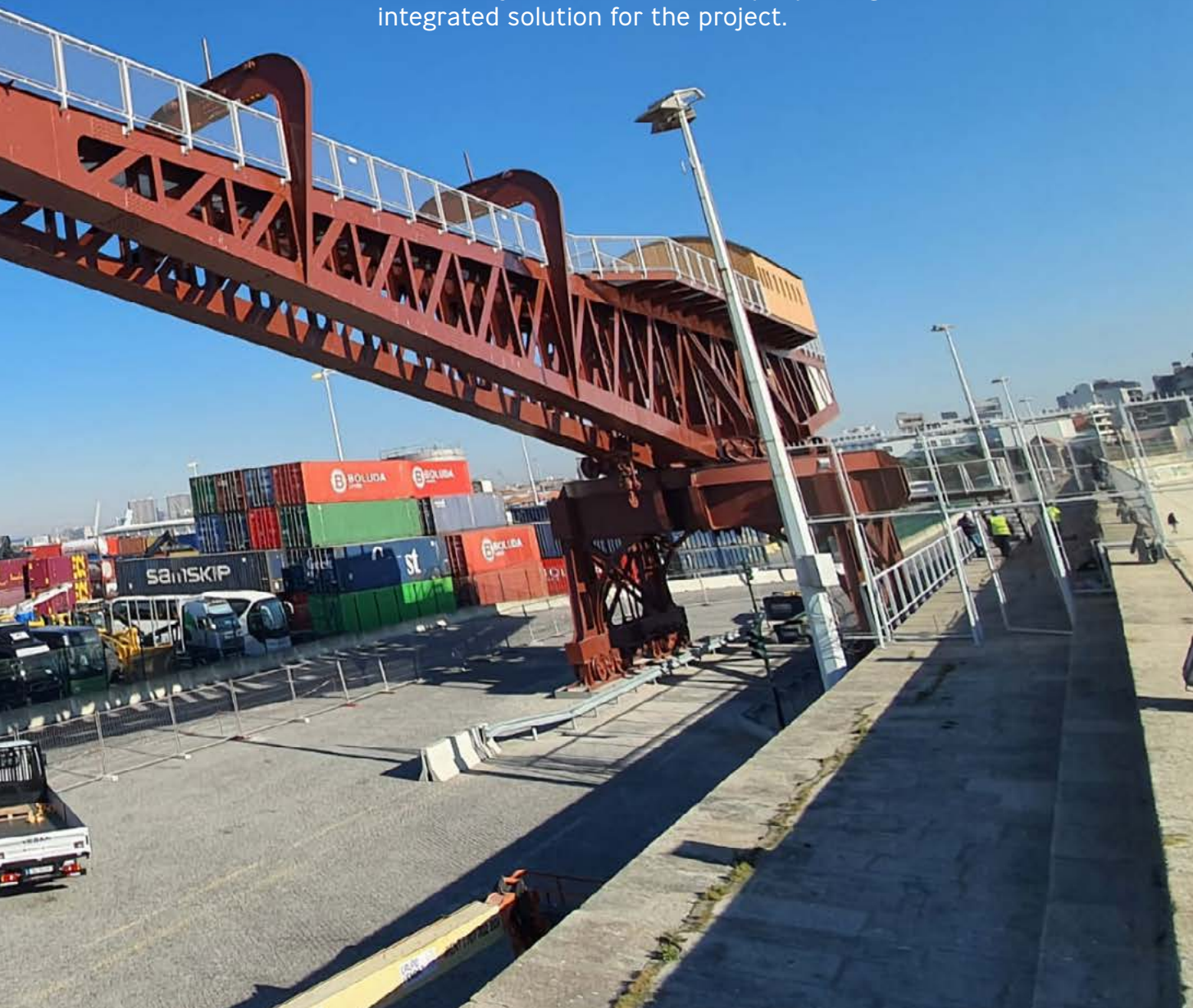


COSCO Star docked at COSCO Shipping's repair yard in Shanghai in February for Fastar XI application



ICONIC PORT CRANE REHABILITATION

The huge Titan crane in the port of Leixões in Portugal has been an industrial landmark for over 130 years, visible from both land and sea. Years of exposure to the harsh marine environment had left the crane unusable. Then, in 2021, the port authorities decided to rehabilitate the crane ready for re-use and Hempel put together an integrated solution for the project.





Anyone who walks the Matosinhos beach near Porto in Portugal can see the huge Titan crane at the entrance of Leixões harbour. The crane was re-erected in 2021 after extensive repair work – and once again presides over the harbour entrance.

An integrated solution from Hempel comprises a unique package of products and services, tailored to meet the needs of each project. In the case of the Titan crane, the solution included a coatings package based on its award-winning Avantguard activated zinc primer, technical support from its services team in Portugal and a performance guarantee.

As well as increasing efficiency during application, this combination ensured that the iconic Titan crane will remain corrosion free for many years despite the extremely harsh marine environment.

The challenge

During the restoration, some of the steel from the original crane was re-used and the rest replaced. As a result, the crane needed an anti-corrosion solution that could be applied to both new and rehabilitated steel. The solution also had to be extremely robust, as the crane will stand for many years in the extremely corrosive port-side environment.

Engineering company Mecwide was responsible for the project. It asked Vesam Group, an expert in creating integrated and innovative solutions in metallic and mixed structures, to design the solution. Long-standing Hempel customer Prozinco was contracted to complete the anti-corrosive work. Prozinco is an industrial paint applicator and steel construction company with long experience in anti-corrosion protection of new constructions and rehabilitation projects.

The solution

Hempel specified a complete integrated solution for the project, combining coatings, technical service and performance guarantee. The coatings package was based on its Avantguard 750 zinc epoxy primer.

Thanks to activated zinc technology, Hempel's Avantguard zinc epoxy primers utilise three methods of corrosion protection:

the barrier, inhibitor and galvanic effects. As a result, Avantguard coatings can provide the same or better corrosion protection than other zinc-rich coatings with fewer coats or at thinner dry film thicknesses. This helps extend coating lifetime and reduce maintenance requirements, while also reducing paint consumption and VOC emissions during application. Avantguard primers also dry significantly faster than other zinc-rich coatings and remain easy to apply, even in high humidity and at different temperatures.

At the start of the project, Hempel's sales team and laboratory in Portugal worked closely with Prozinco to ensure the perfect coating specification for the crane. In addition, the company's services team assisted Prozinco during the application, overseeing all aspects of surface preparation and application to ensure a high-quality finished coating, with minimal time and waste.

To give Mecwide, Vesam Group and Prozinco additional peace of mind, Hempel's solution also includes a performance warranty, which guarantees that the coating system will protect the crane for at least 25 years. ■

At a glance

Customer: Vesam Group, a pioneer in creating integrated and innovative solutions in metallic and mixed structures.

Sub-contractor: Prozinco, a civil construction company with long experience in anti-corrosion protection of new constructions and rehabilitation projects.

Project: The iconic Titan crane in the port of Leixões, Portugal.

Coating system:

Primer: Avantguard 750.

Topcoat: Hempthane HS 55610.

Area: 4,000 m².



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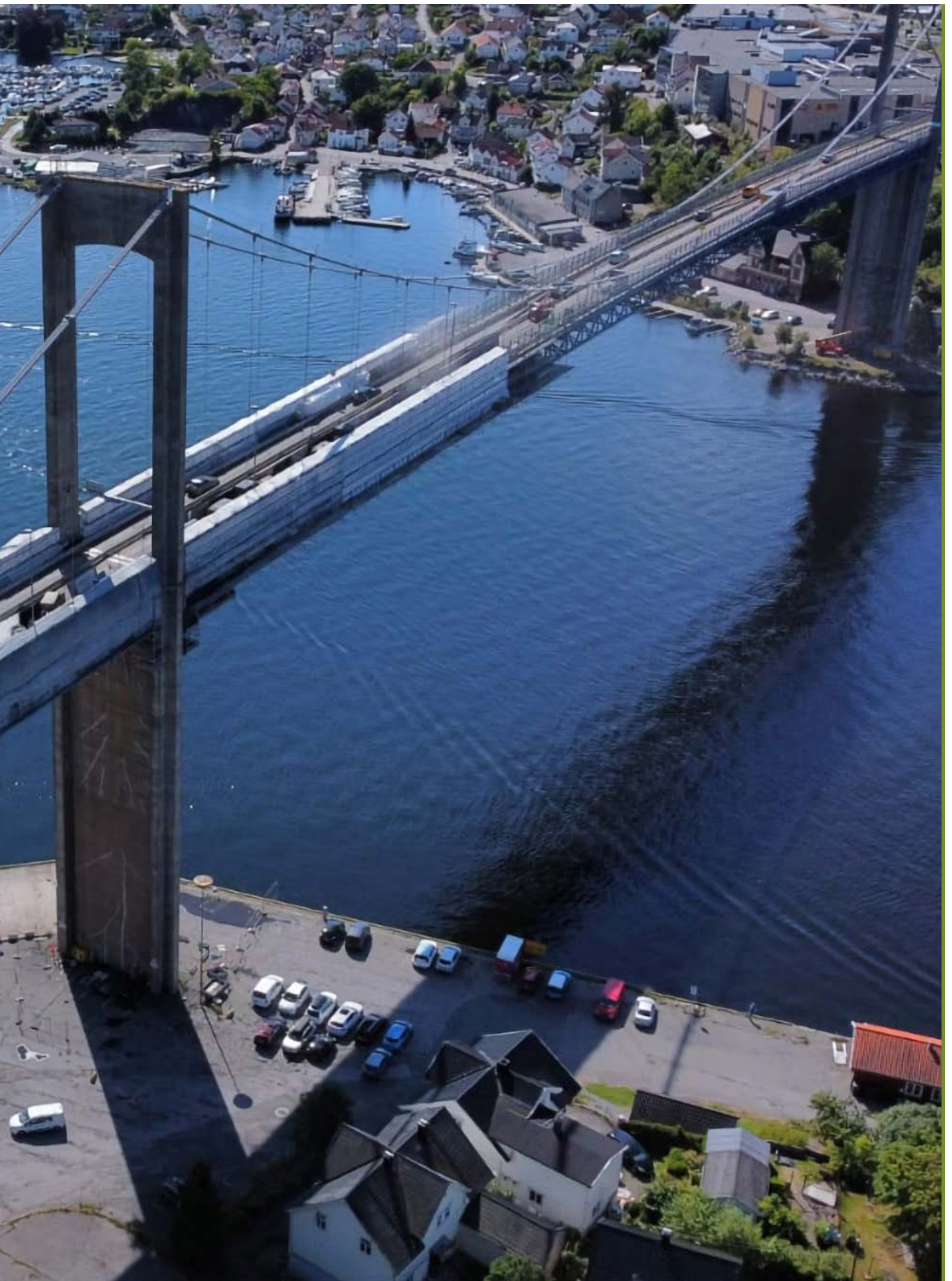
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PROTECTED BRIDGE PROTECTION

The Brevik Bridge in Norway is being surface treated with Teknos paints to form a strong coating system that will provide excellent corrosion and UV resistance.



The Brevik Bridge spanning the Frierfjord, a fjord in South-Eastern Norway, is currently undergoing extensive maintenance work ordered by the Public Roads Administration (Statens vegvesen). As part of the maintenance, the suspension bridge will be surface treated to preserve it and ensure its future use.

Global coating manufacturer Teknos is supplying the paints being used in the surface treatment process to Trescon, the main contractor on the project. Trescon is a Norwegian company that specialises in construction building, rehabilitation and maintenance.

Brevik Bridge is located in the county of Vestfold og Telemark in South-East Norway. The bridge is 676m long and was originally opened in 1962. The constructions and detail of the Brevik Bridge are protected by the Norwegian Cultural Heritage Act.

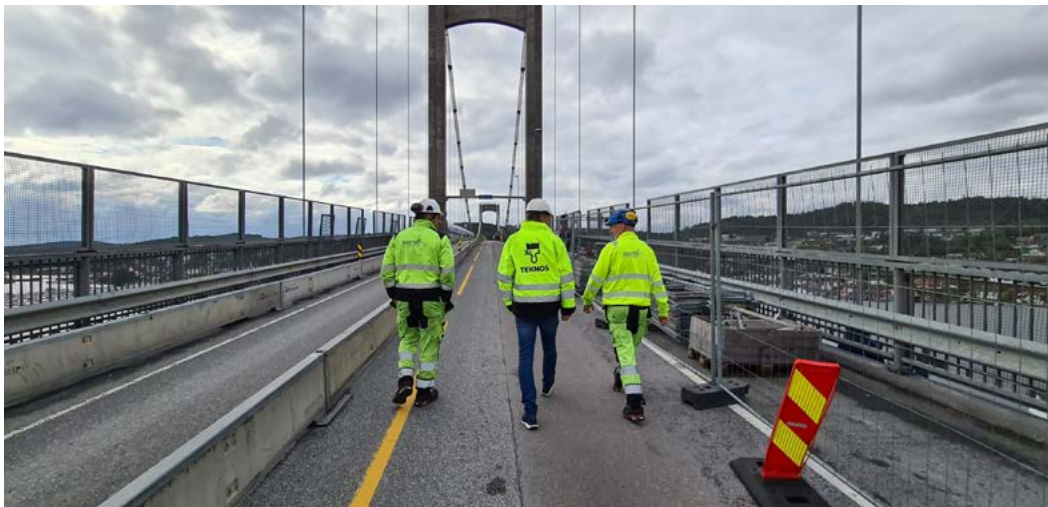
Bridge project

The maintenance project began in April 2021 with pedestrian and bicycle lanes being widened, and the bridge being strengthened to avoid detours on the E18, which runs from Craigavon in Northern Ireland to St Petersburg in Russia, passing through Scotland, England, Norway, Sweden and Finland. The project also calls for the metal construction of the bridge to be surface treated. This means treating some 9,000m² in total.

Coating system

The coating system used in the surface treatment is a duplex system. This combines metallisation and additional corrosion protection – in this case a reinforced epoxy and polyurethane coating – to provide enhanced corrosion protection. Teknos has supplied all the paints used in the coating system.

“Teknos supplied three different products



→ Teknos supplied three different products for the Brevik Bridge: Teknoplaster Primer 5, Teknomastic 80 Primer and Teknodur 0050

for the Brevik Bridge: Teknoplast Primer 5, Teknomastic 80 Primer and Teknodur 0050,” explains Johnny Gustavsen, Area Sales Manager at Teknos Norway. “These products together form a strong coating system that provides excellent corrosion and UV resistance. In addition, they form a paint film that is highly resistant to chemical and mechanical wear. Similar coating systems are usually used on offshore installations.”

The paints used must fulfil the requirements of the NORSOK M-501:2012 standard. Globally known, NORSOK standards are based on recognised international standards adding the provisions deemed necessary specifically for the Norwegian petroleum industry.

Crucial criteria

Fast feedback, the right paints, and high service level were crucial criteria. Thanks to fast feedback, high service level and products with the required approvals, Teknos was chosen as Trescon’s paint supplier in the Brevik Bridge maintenance project. Cooperation between Trescon and Teknos on several other projects over the years has proved that whenever there is a question regarding coatings, whether it is big or small, Trescon can rely on quick response and support from Teknos.

“We are very happy with our cooperation with Teknos. Teknos experts listen to our needs and deliver the full package when it comes to what we expect in product quality, support and service level,” says Arturas Bytautas, General Manager at Trescon.

“Teknos products are easy to work with and apply. Also, when needed, Teknos experts support us with technical support and advice, which is very important for us since we work in many different and challenging environments,” Donatas Daskevicius, Project Manager at Trescon comments on the companies’ cooperation. ■

“The paints used must fulfil the requirements of the NORSOK M-501:2012 standard. Globally known, NORSOK standards are based on recognised international standards.”

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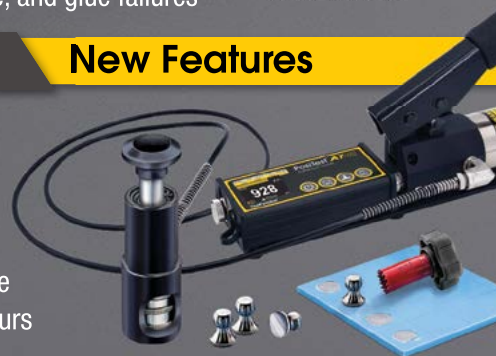
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ANALYSIS

ANTI-SLAGGING BOILER COATING

A ceramic coating solves the problem
of slagging in a pulverized coal boiler

In 2020, a large power generation company in Southeast Asia commissioned the production of a new 600MW Pulverized Coal (PC) Boiler at its plant. The company had a requirement to be able to burn the full range of its coal, which had proved challenging due to the high calcium content of the fuel. As a result, a new boiler was built and commissioned by a reputable manufacturer.

Since the boiler has been in operation, the plant has suffered with a build-up of slagging on the tubes. The plant's requirement to burn the full range of coal means that some ranges had to be burned at an increased temperature, which had been causing excessive slagging at the bottom of the boiler. To fix the problem, the build-up was being regularly blasted, which was time consuming and inefficient.

Boiler slagging

Pulverized coal boilers experience slagging as the molten ash adheres to the surrounding substrates. This is also commonly referred to as slag. The amount of slag is primarily dependent on temperature and the types of coal being used and whether it is anthracite, bituminous coal, sub-bituminous coal, or lignite. Boilers will often slag in the upper sections of the furnace where the temperatures are higher near the superheat pendants, but slagging may also occur on the waterwalls. The build-up has a negative effect on boiler operation. The slag acts as an insulation to the tube substrate and this loss of heat transfer is detrimental to performance. When slag builds up on the tubes the heat transfer decreases, lowering the temperature of the steam going to the superheated portion of the system and therefore decreasing the overall efficiency of the system. Finding a solution to excessive slagging can have tremendous benefits for a boiler operator's bottom line.

The solutions

In most cases there are two viable options to resolve the issue of slagging. A reactive method comprises the installation and maintenance of water cannons to regularly remove the fouling. However, whilst the cannons are effective at removing most of the build-up, parts of the cannon often need replacing due to the erosive effect of water running through them and the ash burning around them. This makes the installation of water cannons a time-consuming and costly method. The other option available



is to apply a ceramic coating alternative to reduce the build-up of slagging, which was the solution chosen by the plant in Southeast Asia. The properties and benefits of such a ceramic coating are discussed in more detail below.

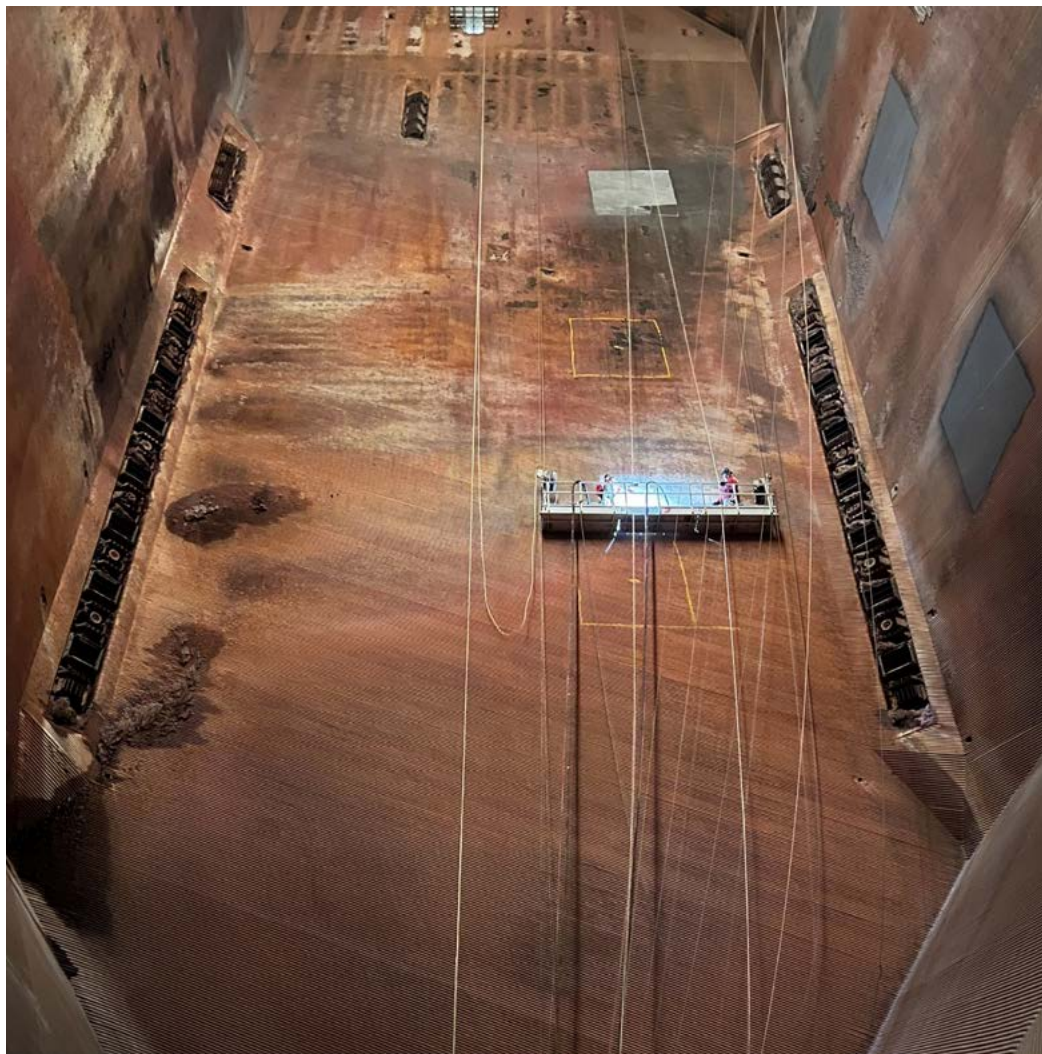
Anti-Slag and Fouling Properties of the Ceramic Coating Surface

Anti-slagging technology such as that offered by Integrated Global Solutions (IGS) bonds tightly to the boiler tube's surface to create a non-porous, non-wetting, non-reactive surface. The coating will significantly limit molten slags from bonding to the surface, reducing slag and fouling agglomerations. Waterwall furnace tubes and superheater tubes can benefit from being protected with the coating. IGS has developed a series of ceramic coating formulations which are modified to match boiler environments.

Increase heat rate, lower Furnace Gas Exit Temperatures (FGET)

Ceramic coatings can help increase heat absorption into boiler tubes by reducing the amount of slag or fouling on the OD surface of the tube, and by eliminating the formation of corrosion scales on the tube surface.

The coating itself exhibits high thermal conductivity and high emissivity, which means the coating layer will not insulate the tubes. A coated tube will have higher heat absorption compared with an uncoated scaled tube. It is possible to rebalance a boiler that is suffering from severe slagging or fouling. The lower FGET is possible by absorbing more heat into the waterwalls while achieving the same final steam temperature (reduced fuel input, same final steam temp, reduced waste heat). It is even possible to help address boilers that have de-rated their MW output capacity due to superheater fouling.



Reduce damage from soot blowers and water cannons

By significantly reducing the amount of slag or fouling on a tube's surface, it is possible to significantly reduce the frequency at which soot blowers or water cannons are activated. As there will be less slag attached to the tubes, lowering heat absorption, there's no need to continuously run the slag control equipment. When soot blowers or retractable lances remove slag and fouling, the tube itself will be thermally shocked due to the removal of the dirty insulating material, creating the potential for circumferential cracking or corrosion assisted fatigue (CAF) of the tube. Reducing soot blower usage inhibits this and slows the wasting of the tube's surfaces.

The in-situ application

The plant and the boiler manufacturer agreed that a ceramic coating would be the most efficient long-term solution to increase productivity and negate the requirement for water cannon blasting and the associated maintenance costs.

The contractor, IGS, mobilised a team to the plant in December 2021 to complete the application of the ceramic coating on 10% of

the total surface area. After results testing for effectiveness, the remaining 90% would be coated. The work was carried out across four night shifts during a planned shutdown.

The result

The ceramic coating will significantly reduce the amount of slag build-up throughout the boiler. The sensors coated with the IGS anti-slugging technology will be hotter due to the prevention of fouling inhibiting the heat transfer process. The plant is expected to see significant financial and carbon savings associated with reduced maintenance and increased efficiency.

"This project has been a great success for IGS," says Pete Johnson, Director O&G – APAC at IGS. "We have been able to fulfil the client's requirements to help resolve the issues that they had been experiencing in relation to slugging and fouling within the boiler."

"The feedback we have received from the client has been very positive; they were particularly impressed with our professionalism, our communication channels, and our safety protocols."

"We are pleased with the results that we are initially seeing, and we'll be working closely with the client moving forwards to monitor and maintain the performance of the boiler." ■



ENHANCING PRODUCTION EFFICIENCY

The corrosion protection and impact resistance of steel surfaces are key factors to consider in the production of engineering structures for industrial plants. Therefore, it is not too much of a surprise that the surfaces of the majority of products designed and manufactured by the Finnish company Premekon Oy, which include machinery platforms, stairs and railings, are protected with Teknodur Combi 3560-75 polyurethane primer for single-layer coating.

Premekon Oy is a specialist in the manufacture of steel service platforms for industrial use. The company's strength lies in its in-house design approach, meaning that the company can offer easy turnkey solutions to the customer, most of which are directed to pulp and paper mills all over the world. Material choices include painted or hot-dip galvanised steel, stainless steel and aluminium.

Over the course of his career, Premekon's Business Director, Jussi Tiippana, has developed a thorough understanding of surface treatment processes for steel structures and has also become quite familiar with Teknos's comprehensive services. "We are highly satisfied with Teknos's products and technical expertise. Our sales, design and production teams have received outstanding support from Teknos in matters of surface treatment," says Tiippana.

"For each project, our customer defines a surface treatment specification and then, depending on the conditions and the specification itself, we often recommend a single-coat system," he explains. "The Teknodur Combi 3560-75 polyurethane topcoat system is an apt choice here because the product combines all the crucial properties – corrosion protection, durability and elasticity – in a single paint."

Boosting production capacity

The innovation, efficiency, ease of use and sustainability of new coatings are increasingly important factors in industrial surface treatment processes. Tiippana stresses that "single-layer, direct-to-metal coatings are slightly more expensive than normal primers and topcoats, but their absolute advantage is higher production capacity, which means that we are better able to meet our customers' tight delivery deadlines. Furthermore, we can also cut the drying time because there are fewer layers of paint to deal with."

Teknodur Combi 3560 coatings are very strong and impact resistant. The finished surface is waterproof and highly resistant to a wide range of chemicals and UV radiation from the sun. "It is essential for us that the paint surface can withstand rough handling during the installation phase of the structure," explains Tiippana. "And even if any maintenance or patch painting is required, such fixes can easily be done on site."

Enhancing sustainability

The sustainability of coatings is also an important matter for Premekon. The high-solid content of Teknodur Combi 3560-75 significantly reduces VOC emissions from the surface treatment processes, while the single-layer coating system itself reduces the amount of paint waste.

"Teknos's professional and versatile service and conclusive demonstration of the coating solutions it has on offer has convinced more industrial equipment suppliers and end-users to switch to single-layer coating," explains Tiippana. "It's a win-win situation for all parties involved." ■

Premekon Oy at glance

Industry: Steel structures manufacturer

Turnover: €12.7 million (2020)

Employees: +100

Number of projects: 900

Total project mass: 2.6 million kg

Advantages of Teknodur Combi 3560

- Shorter processing time in the paint shop.
- Significantly improved corrosion and abrasion resistance.
- Excellent colour and gloss retention and weather resistance.
- Significantly lower VOC emissions compared with similar solvent-based systems.





The majority of products designed and manufactured by Premekon Oy are protected with Teknodur Combi 3560-75

MOVING FROM PNEUMATIC TO ELECTRIC

A clear explanation of the benefits of using the King-E electric airless sprayer persuaded a steelwork contractor to switch from pneumatic to electric sprayers.

For many years, a structural steelwork contractor based in the north of England had used pneumatic IK sprayers to apply paint to its steel structures. These sprayers are either 60:1 or 70:1 units, although older 58:1 units are also used. For some jobs, 2K materials are applied through plural pneumatic 2K sprayers. Coatings used by the company are generally epoxy primer and intumescent coatings.

However, although the company was satisfied with the overall reliability and performance of their legacy IK pneumatic equipment, they were not too happy with a couple of significant drawbacks. One is the high energy consumption and cost, due to the use of compressed air. The other is the high sound level (in excess of 90 dBA).

They considered whether moving from pneumatic to electric sprayers would be more advantageous. However, they were concerned that the pump size of an equivalent electric sprayer might not be sufficient.

To get some advice, they contacted Spray Plant from Leeds, UK. Spray Plant is a UK specialist supplier of paint spray guns and spray equipment. They supply a full range of coating equipment from polyurea and foam spray to PFP and epoxy intumescent systems, and work with manufacturers such as Graco, DeVilbiss, Microguard, ASM, Titan, Scott, Binks, Anest Iwata and Honeywell.

Equivalent spray output

After talking with the company about their requirements, Spray Plant Managing Director Mark Crabtree immediately identified the source of their concerns. "The technical

challenge with moving from pneumatic to electric is the perception that the pump size of an electric sprayer is less than the pneumatic equivalent. Pneumatic sprayers (60:1) have a 220 cc wet end, whereas the Graco King E-60 sprayer, for example, has a 115 cc wet end. This leads to the understandable perception that the spray output of a 60:1 pneumatic sprayer is greater than that of a King E-60."

However, Mark explained to the company that output is based not upon wet end size but tip size. In the majority of applications, the output of both pumps is the same. Theoretically, at maximum cycle rate, a 60:1 pump may allow for 12.9 lpm. In practice however, the average cycle rate of a 60:1 pump is 10-20 cycles per minute or 2.15-4.9 lpm. For a King E-60, the maximum volume is 2.9 lpm at 5,000 psi, or 4.1 lpm at 3,000 psi, as volume increases as pressure decreases. Trials have used tip sizes of .013, .017, .019 and .023. As the tip size determines the actual output of the pump, delivery ranged between 0.69 lpm and 2.15 lpm. In other words, there is no difference in spray output when moving to electric.

Less energy consumption

As they are electric, the energy requirement is considerably less than that required for their pneumatic equivalent. Requiring a 5kW power source, there is no need to install an expensive air ring main from an air compressor. This avoids the loss of air through the system – or alternatively wasted energy. Additionally, the cost of generating compressed air is an expensive, inefficient process. In new facilities an electric supply will already be present within the spray shop.



Less noise

And then there's the second drawback of pneumatic sprayers – noise. "The noise from King E-series is considerably lower than from a pneumatic unit," adds Crabtree. "In fact the noise level is a mere 70 dBA compared to the 90 dBA of the pneumatic equivalent."

Paint wastage through overspray is also addressed with the King E-series. Due to there being virtually no pulsation on pump changeover, the spray fan is more consistent. It has actually been found that a smaller tip may be used in comparison to the same material application using a pneumatic sprayer.

Smoother operation

As with pneumatic sprayers, King E-60 can also support the use of two spray guns simultaneously. It also has the ability to support the same lengths of paint hose as pneumatic pumps. Two further advantages

of electrical technology are that it reduces pulsation and completely removes the possibility of motor icing that can occur with pneumatic air motors, both of which make jobs run more smoothly. The King E-series electric airless sprayers are available for hazardous as well as non-hazardous locations.

Based on Spray Plant's expert advice, the structural steelwork contractor realised that electric sprayers provide a viable alternative to the industry norm, and decided to switch from their pneumatic sprayers to Graco's King-E electric airless sprayers.

Multiple power options

The King E-60 runs at 15A at 200-240V, 50/60 Hz, single phase; or 25A at 100-120V, 50/60 Hz, single phase. Its ability to run from 110-120V is useful as this voltage is required for power tools to operate in certain countries (e.g. the UK). ■



REVIEW

PIPELINE INTEGRITY TECHNOLOGY

An inspection technology designed to eliminate challenges in the inspection and maintenance of pipelines is proving a global success as the technology is adopted by oil and gas operators worldwide.

Tracерco's Discovery technology was developed to provide operators with an enhanced understanding of a pipeline, its coating and process fluid – and all whilst fully operational. It has fast become a market leader, with the technology recently being deployed on assets across the globe including three subsea inspection contracts in the Gulf of Mexico and a pipeline inspection project in West Africa.

"The Discovery technology was designed purely to eliminate the challenges facing operators on the inspection and maintenance of pipelines where modern systems are increasingly operating in more challenging conditions," explains Jim Bramlett, Commercial Manager for Tracerco in North America and one of the team responsible for the successful market delivery of Discovery. "As such, the market demanded more advanced inspection technologies that could meet the challenges of more complex pipeline designs and new, unencountered pipeline conditions."

Fast scanning

Tracerco prides itself on the principle behind the Discovery technology, which uses a Computed Tomography (CT) beam passing through a material to measure the density and calculate any weaknesses in the pipeline, all in one single scan.

Combine this with Tracerco's inbuilt 'fast

scanning' technology, which reduces overall scan time by up to 80%, and operators across the globe are benefitting from maximum data capture never before available in the market and from one single inspection.

Already in operation across the Americas, Australia, Europe, the Middle East and West Africa, Discovery has successfully gathered over 4,000 scans of valuable data, helping operators refine and improve the efficiency of existing pipeline models.

Proven track record

Tracerco is part of Johnson Matthey PLC and is a global oil and gas service company. Over 60 years of Tracerco's experience has gone into making Discovery the best subsea CT scanner available, allowing operators to visualise flow assurance and integrity issues. With dedicated R&D support, multi-million-dollar investment and working in partnership with majors in the industry, Tracerco has secured comprehensive patent protection dating back to 2011. The technology has a field-proven track record, and to date Discovery has provided real-time critical insights for many of the world's deepwater infield flow lines. With these insights, operators can be assured of making well-informed decisions on the future of a pipeline without the need to stop or interrupt production. ■



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ECONOMICAL CONTAINMENT COATING

Belzona 5815 offers an economical alternative for secondary containment areas holding nonaggressive chemicals.



In numerous industries, concrete is used to build secondary chemical containment areas and bunds. The function of these structures is to retain spilled chemicals, facilitate product recovery, and prevent environmental contamination, as required by environmental and safety regulations. While concrete is a cost-effective and sturdy material, it is susceptible to physical and chemical damage due to its porosity. Concrete walls and floors are prone to damage caused by cracking, increased porosity, reinforcing bar corrosion, and chemical attack. If the deterioration is not addressed early, the structural integrity of the concrete may suffer, and even with the use of the bund, it can result in contamination of the surrounding areas and groundwater. Concrete also moves, mostly due to thermal expansion and contraction. If expansion joints are not placed and spaced accordingly, this movement can lead to cracking, affecting the monolithic character of the concrete substrate and exacerbating ingress of chemicals.

Economical solution

A great number of asset owners opt for containment areas coated with protective coatings. Some of these coatings are specifically designed for chemical resistance to aggressive chemicals, whereas others are less chemically resistant but more flexible, hence ideal for crack bridging. Products like Belzona 436I, for instance, provide both outstanding chemical resistance and flexibility. However,

it could be quite costly for secondary containment applications where the stored chemicals are rather benign. This was the main reason for Belzona launching Belzona 5815, a solvent-free containment grade coating with enhanced flexibility, although it is currently only available in the US.

When compared with other containment coatings on the market, Osmay Oharriz, Technical Manager at Belzona, notes that: "Belzona 5815 is an economical solution to secondary containment areas holding nonaggressive chemicals." Belzona 5815 has undergone testing to prove that the product can resist a range of dilute acids, alkalis, fuels, and oils.

"It can bridge cracks in concrete up to an extent, and has great adhesion to non-metallic and metallic substrates," explains Oharriz.

Testing also proves that Belzona 5815 has high tensile and flexural strength as it can resist pressure up to 2,430 psi after it has been cured at 72°F (22°C) for seven days, allowing it to bridge cracks. Additionally, it is temperature resistant, enduring temperatures up to 320°F (160°C). For many applications, the product is suitable at temperatures down to -40°F (-40 °C).

Finally, Belzona 5815 is easy to mix and apply, no surface conditioner is required. Belzona 5815 can be applied by brush, roller, squeegee, or an airless spray system for large containment areas. ■

Belzona 5815 can be applied by brush (left), roller (right), squeegee, or an airless spray system for large containment areas





Reducing environmental friction with high-performance coatings

Mobility, energy and general engineering operations benefit from lower energy consumption, reduced CO₂ emissions and longer equipment operating life

Specialised physical vapour deposition (PVD) coatings are widely recognised for the critical role they perform in enhancing operational performance and extending the life of parts across countless manufacturing and industrial sectors. Less understood is the value that these coatings provide in reducing the environmental impact of the industrial processes where they are used.

It starts with one of the primary reasons to use PVD coatings in the first place, which is to reduce friction between mated parts to improve performance. This can result in direct energy savings and by extension, reduced CO₂ emissions. As these coatings extend the life of component parts that require frequent replacement, the raw materials, metals and energy that are required to manufacture a replacement part are also saved.

In fact, some specialised coatings manufacturers are making a strong case that coatings are a significant contributor to improving the environment. They not only point to these environmental benefits, but also to the enhancements they have made in making their own coating equipment operate more efficiently. In addition, continued advancements in specialised PVD coatings are playing an important role in the design of components for new and emerging green technologies.

Reducing friction with specialised coatings

Reducing friction when mated components are in contact with each other is critical, particularly in punishing environments where there are high loads and high wear. Bearings, gears, rollers and other precision components

suffer from excessive wear, surface fatigue, pitting, galling and corrosion which can also cause failure, especially in high-load applications.

To prevent these issues from occurring, specialised PVD coatings are applied in thicknesses of typically only a few micrometres to further harden the surface of these parts. And through mechanisms such as altering the surface chemistry they can also lower the coefficient of friction. As a result, less energy is used and fewer emissions are generated.

Carbon-based coatings such as Diamond-Like Carbon coatings (DLC) from specialised coatings formulators like Oerlikon Balzers are even more durable. Produced mainly through Plasma-Assisted Chemical Vapour Deposition (PACVD), these well adhering coatings provide a unique combination of high hardness and low friction coefficients.

Such coated components are utilised for a variety of applications, including wind turbine shaft bearings and planetary gears; stainless steel cutting blades and piston pumps, and sliding components across many industries. The coatings are also a proven method to upgrade critical rotating parts in hydraulic drives, pumps and valves.

Advanced, hydrogen-free DLC coatings provide even higher hardness along with a very low coefficient of friction. These coatings can be applied in the most demanding environments for high friction, wear and contact areas, such as in hydraulic pump parts, mechanical seals and high-pressure valve components. Today, they are also playing an increasingly important role in e-mobility applications.



“ Consider that a single percent gain in efficiency for a 200-megawatt gas turbine represents the equivalent power needed for 1,500 homes. ”

Small efficiencies add up

Even small percentage gains in energy savings can really add up in large scale industrial environments. “Consider that a single percent gain in efficiency for a 200-megawatt gas turbine represents the equivalent power needed for 1,500 homes,” says Alessandro Zedda, Chief Technology Officer at Oerlikon Balzers.

Seemingly minor factors such as a smoother surface finish can improve fuel efficiency. In the aerospace and energy sectors, for example, PVD erosion coatings are applied to compressor blades to protect polished surfaces from degrading over time. This can reduce fuel usage by up to 0.5% while promoting component longevity. These fuel reductions translate into comparable CO₂ reductions.

Similarly, in the automotive sector, DLC-coated valve and power train components can reduce the friction mean effective pressure (FMEP) by 10%. This translates to a 2% reduction in fuel. A 20% reduction in FMEP will generate a 5% fuel consumption reduction.

More stringent environmental regulations and standards worldwide are also causing industry to focus on reducing their carbon footprint and design greener products.

Take large cargo ships as an example. Today, operators need to reduce the sulfur content of their fuel in order to be compliant with current sulfur cap requirements. With a cleaner fuel mandate, marine engine manufacturers required a new fuel injection technology because clean fuels typically do not lubricate as effectively as those with a higher sulfur content.

As a result, the coatings used in marine diesel engines also needed to be redesigned to ensure the new clean fuels will work well.





Coatings that meet this new requirement have become an enabler of more efficient, higher performance, cleaner and smoother running machinery.

Extending the life of parts saves energy

The environmental benefit of high-performance coatings is also realised by how they extend the life of parts and tools. When parts last longer they are replaced less frequently, which reduces the raw materials, metals, and energy it takes to manufacture them.

In the automotive sector, forming tools are made from multi-ton pieces of steel in the negative shape of a car. Used to make millions of cars, the forming tools will degrade over time and require reworking. To ensure optimal performance and long life, they require polishing and a PVD coating application. In addition to saving energy by keeping the forming tool in optimal condition, additional energy is saved by less frequently moving equipment of this size and weight to a separate location to be repaired.

In the energy sector, applying a DLC coating to roller bearings in wind turbines extends their life and lowers maintenance expenses. Consider that changing one main shaft bearing costs between \$200-300,000 in addition to the disruption caused by taking the turbine off of the grid.



Green technology development

Beyond improving the efficiency and carbon emissions of existing systems, PVD coatings can be an enabler of new green technologies in categories such as fuel cells and high-power energy density batteries.

"Within the fuel cell sector, we are working with a client who manufactures bipolar plates, a key component in fuel cells," explains Zedda. "Here, the role for a PVD coating will be to promote conductivity while at the same time resisting corrosion. Together these attributes will promote the longevity of the fuel cells, extending their environmental benefits."

He adds: "We are also working with clients to apply PVD coatings on some exciting and highly innovative projects in high power energy density batteries. As industry continues to develop environmentally friendly innovations, there will be more opportunities for coatings to be engineered to support their performance and overall life span."

Efficiencies in coating application generate an environmental ROI

Further up the specialised coatings supply chain, coatings manufacturers themselves have examined their processes for applying coatings since it consumes both materials and energy.

When the energy consumed to produce coatings is compared to the energy savings generated in their application, either through the improved efficiency and longevity of an engine or a cutting tool, an 'energy payback' or return on investment (ROI) is generated.

"We are constantly striving to reduce the energy consumption of our coating equipment," says Zedda. "Our new coaters consume 40% less energy by using new more efficient plasma sources. Multiply this saving on every batch at all our coating centres around the world and the environmental benefit is huge." He adds: "While the impetus to explore a new source was environmentally-driven, it is also in our customers' economic best interests because it reduces their coating cost and shortens our manufacturing cycle."

"Specialised coatings have an important role to play in reducing our environmental impact. Energy consumption and carbon emissions of manufacturing and operations processes can be reduced significantly. So, while industry continues to use specialised coatings for their ability to enhance operating performance, the environmental impact is an important value-add that should not to be overlooked." ■



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NEWS

Enhanced fire protection

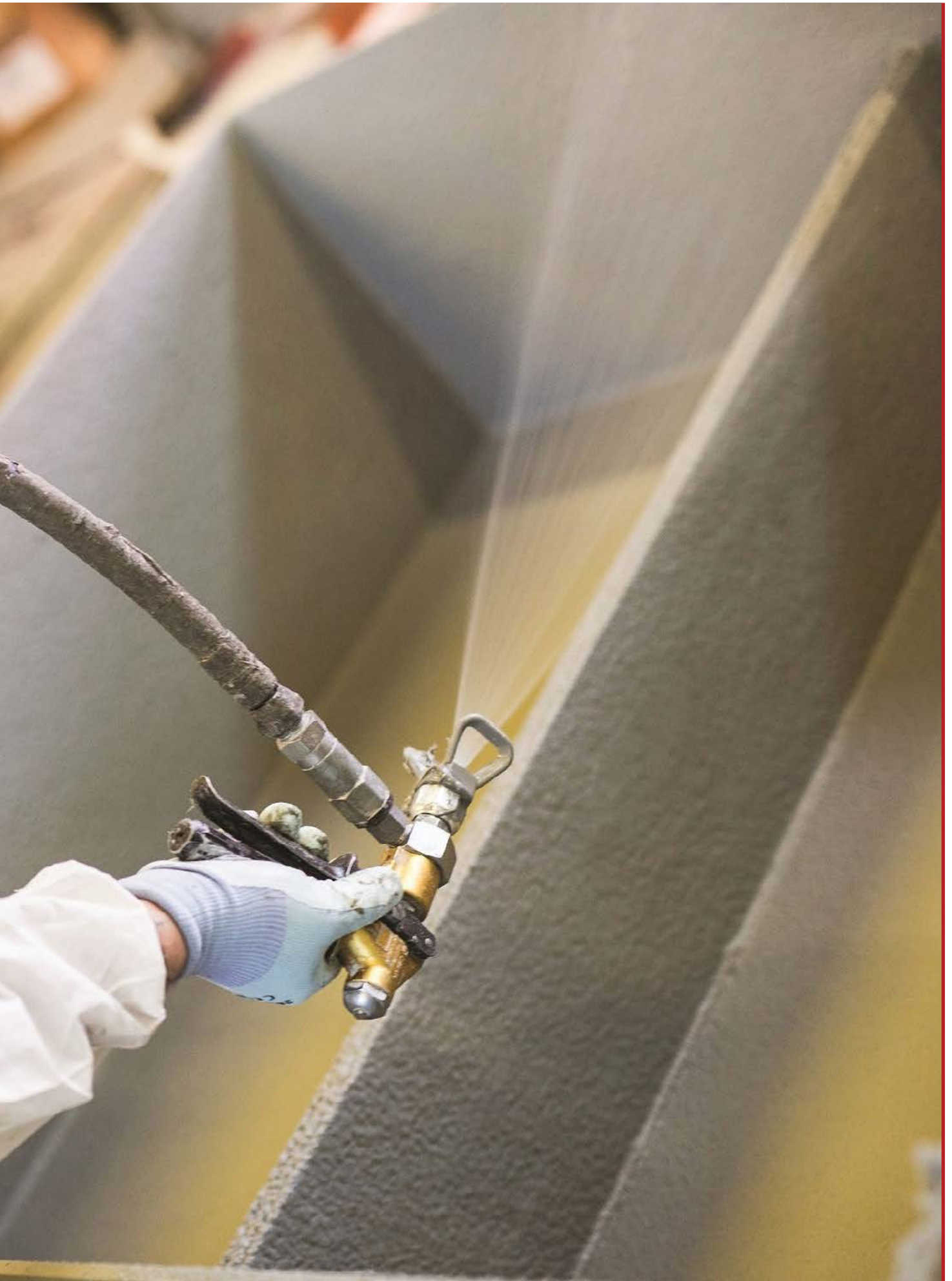
PPG has announced that it has received independent verification of enhanced durability for its Pitt-Char NX passive fire protection (PFP) coating system. The verification was provided by UL Verification, an independent assessor that scrutinises the validity of product performance claims.

In an industry first, PPG Pitt-Char NX coating was subjected to double the exposure conditions for the most onerous category in the UL standards for durability. After exposure, the coating was tested against control samples to verify compliance with the relevant UL fire standard.

"This endorsement of double exposure demonstrates that even in the most extreme environmental and fire conditions, PPG Pitt-Char NX coating can provide performance with the very highest levels of confidence," said Richard Holliday, PPG Global Director, Hydrocarbon PFP, Protective and Marine Coatings.

The latest UL testing results add to several third-party accreditations already awarded to PPG Pitt-Char NX coating system. These include ASTM, ISO and NORSOK accreditation for the coating's suitability for industrial, marine and offshore environments without degradation in fire resistance.

PPG Pitt-Char NX coating is a flexible epoxy PFP system offering reduced coating thickness, lower weight and faster application, while also providing outstanding fire resistance and durability.





New acquisition

Hempel has acquired the coatings division of the Omani conglomerate Khimji Ramdas, to expand its Oman operations and further establish itself as a market leader.

This is Hempel's first acquisition in the decorative segment in the Middle East, supporting its strategy to double its size by 2025. Hempel's Double Impact strategy will be realised through both acquisitions and organic growth, as well as ambitious investments in sustainability, innovation and digitalisation.

Khimji Paints is a leading paint and coatings manufacturer in Oman, with a strong distribution network of more than 50 owned and independent retailers. Khimji Paint was built on a solid foundation of superior quality, true value and excellent customer service, which matches perfectly with Hempel's purpose and values.

"This transaction marks a significant milestone for Hempel in our global growth journey," says Joe Devitt, Executive Vice President of Decorative at Hempel.

New decorative floor coating

Sherwin-Williams has launched a new high-speed curing range of decorative flooring coating systems which can be installed in a day with minimum downtime for industrial and commercial projects.

The Acrydur range, available across Europe, offers decorative systems using coloured quartz aggregates and flake chippings which create multi-layer floor systems with full curing in just one hour, even at low temperatures.

New flooring in shops and retail areas can now be installed outside operating hours either at night or weekends, with the floor returned to service the same day, while car park flooring can be installed with minimum downtime.

Acrydur Methyl Methacrylate (MMA) based products and systems offer high durability, temperature resistance and UV stability. The complete product range includes primers, flexible membranes, bodycoats and topcoats which are used together to create flexible multi-coloured systems incorporating anti-slip textures.

Using MMA technology not only enables rapid installation at low temperatures. The thermoplastic resin type creates strong adhesion onto substrates and between successive coats, creating a chemical bond where layers are fused together, which delivers unrivalled durability. Due to their UV stability and strength post curing, the Acrydur systems are also suitable for external projects including vehicle decks and concourse areas.



Extended F1 partnership

McLaren Racing and AkzoNobel have extended and expanded their long-running partnership. The new multi-year agreement will deepen the successful 13-year relationship and explore new possibilities in the areas of sustainability, technological innovation and product development. In addition to continuing as McLaren Racing's exclusive official partner for Coatings Solutions, the company is now

a sustainability partner to McLaren's racing team – heralding the start of a more integrated approach designed to go well beyond the supply of high-performance coatings. Both parties have identified a number of initiatives that will broaden the scope of the strategic partnership and add value in multiple areas. This includes the provision of technical consultation to each other in fields of mutual interest, exploring further opportunities for

↓ Sherwin-Williams has launched a new high-speed curing range of decorative flooring coating systems called Acrydur





innovation and the exchange of personnel.

AkzoNobel and McLaren first teamed up in 2008. Various advances in paint technology have since been achieved, which have not only contributed to the performance of the McLaren Formula 1 car, but have also crossed over to drive innovation in other industries.

New startup challenge

Discovering creative solutions to improve the digital consumer experience is the focus of AkzoNobel's 2022 Paint the Future regional startup challenge, which is all set to be launched in India. Startups are being invited to tap into the company's broad knowledge and extensive expertise to help enrich their own business and build the best value proposition for their digital solutions. Launched in 2019 as AkzoNobel's global startup challenge, Paint the Future has quickly become the largest collaborative innovation ecosystem in the paints and coatings industry. Since introduced, it has been further expanded, with two regional programmes taking place in Brazil and China, while two supplier challenges have also been staged. The company is now organising its second global startup bootcamp, which is scheduled for this year.

"We're excited to share our pioneering spirit and centuries of paints and coatings expertise, work with startups and help to accelerate their innovative solutions," explains AkzoNobel CEO, Thierry Vanlancker. "India's startup

ecosystem is the third largest in the world, a real powerhouse. So we're looking forward to actively collaborating on disruptive digital solutions and exploring how we can paint the future together."



The Paint the Future India startup challenge officially opened for submissions on March 1, 2022. Selected startups will be invited to a collaboration event in late 2022, when the winners will be announced.

New Chairman appointed

Songwon Industrial Co has announced that Dongbek Park, appointed as new outside Director of the Board of Directors at Songwon's annual general shareholders' meeting in Ulsan, Korea has now also been appointed as Songwon's new Chairman of the Board.

Born in South Korea in 1944, Park has extensive experience in the global chemical industry. Before retiring in 2014, he worked for many years for Songwon Industrial Group in various senior management positions.

Park takes over from the previous Chairman, Jongho Park, who will continue to serve as a member of the board. "We are very pleased to have Dongbek Park join us as chairman of our board," said Jongho Park, CEO and former Chairman. "We welcome his broad background and vast experience in the industry, which will allow us to further strengthen the Songwon Group."

Songwon's board of directors now consists of four directors: Dongbek Park, newly elected Chairman and outside Director, as well as the three executive board members and inside directors, Jongho Park, Hans-Peter Wüest and Choung-Sik Kim.

Resin production scale-up

Plans to invest in the expansion of in-house resin manufacturing have been announced by AkzoNobel as part of the company's Grow & Deliver strategy. The scale-up programme, which is already underway, will help build resilience against supply disruptions while making an important contribution to achieving the company's financial and Scope 3 (upstream) carbon reduction ambitions. Resins are a key ingredient for making coatings, used as a binder to hold the pigment particles together and provide adhesion to the coated surface. "All of our businesses use resins, and while we produce a good proportion of what we need ourselves, commodity and other specialty resins need to be sourced from third parties," explains Michael Friede, AkzoNobel's Chief Commercial Officer for Performance Coatings. "Further investing in our own resin capabilities will help us to secure sustainable business growth, as well as supporting our innovation pipeline and sustainability targets."

The plans include investing in sites, equipment and the people needed to optimally run them. They were developed after an internal resins team was tasked with investigating opportunities to unlock more value and make the company more self-sufficient.

Adhesive business acquisition

Arkema has finalised the acquisition of Ashland's Performance Adhesives business. This operation marks a major step in Arkema's strengthening of its Adhesive Solutions segment, and fully aligns with the group's strategy to become a pure specialty materials player by 2024.

With its wide range of key technologies and well-known brands, Ashland Performance Adhesives is a major player in pressure-sensitive adhesives, in particular in decorative, protection, and signage films for automotive and buildings. It also holds leading positions in structural adhesives, and offers an extensive range of adhesives for flexible packaging.

This activity, which employs approximately

← AkzoNobel plans to invest in the expansion of its in-house resin manufacturing





↑ Thomas Howse Ltd has recruited long-standing industry figures Andrew Adkins (top) and Garry Plant (bottom)

330 people and operates six production plants, mainly in North America, generated estimated sales of around \$360 million in 2021 and an EBITDA margin above 25%. It offers excellent commercial, technological and geographic complementarities with Bostik, allowing it to expand its solutions offering and position itself as a major player in high performance industrial adhesives.

New appointments

One of the UK's leading paint and powder coating companies has strengthened its leadership team with two key appointments.

Thomas Howse Ltd, based near Birmingham, has recruited long-standing industry figures Andrew Adkins and Garry Plant. They bring more than 75 years' sector expertise to the historic company, which was acquired by the Shebani Group two years ago.

Adkins, whose track record in the sector spans more than 40 years, takes up the role of Head of Operations. He will spearhead Thomas Howse's in-house production and process improvements programme across both powder coatings and liquid paints.

Plant has been appointed the company's new General Manager. He has been involved in paint production and sales since 1986, both in the UK and overseas, and has worked for the group for many years. He will be working closely with its sales team as well as its customer services and after-sales technical support departments.

"Andrew and Garry join us at an exciting time, and we look forward to drawing upon their expertise to propel us into a new era," says Group Chairman Abubaker Sheibani. "Our research and development lab has been upgraded to enable it to support all of the group's coatings business both in the UK and overseas, ensuring our in-house teams stay at the very forefront of innovation. We have ambitious plans to expand this internal asset throughout 2022 and beyond.

"We have also started a rolling programme of investment in our plants and in the latest technology. These new developments will ensure we continue to set the pace for industry innovation in a fast-moving world."

New coatings guide

Cortec MCI has released a new coatings guide designed specifically for the building maintenance and construction industries. This

two-page handout gives a quick introduction to Cortec Micro-Corrosion Inhibiting Coatings technology before getting down to basics on how and where to apply which coatings. The guide is here to help engineers, contractors, and maintenance crews easily protect structural steel and metal equipment around their facility or construction site.

Facility modernisation

BASF is to fundamentally modernise its infrastructure, including the facilities for the production of chloroformates and acid chlorides at its Ludwigshafen Verbund site. The company is investing a low three-digit million euro amount for this. The measures, which will be completed in the course of 2025, will increase the company's capacity for these products at the site by around 30 per cent. BASF is one of the world's leading manufacturers of chloroformates, acid chlorides and alkyl chlorides, with a current annual capacity of 60,000 metric tons, as well as production facilities at its sites in Ludwigshafen, Germany, and Yeosu, Korea.

"With our investment project we prove our long-term commitment to these high-value specialty products," said Frank Stein, Head of the Regional Business Unit Europe in BASF's Intermediates Division, adding: "As a leading producer in this field, we want to continue to reliably support our customers' growth with a state-of-the-art infrastructure."

BASF sells around 30 individual products from the group of chloroformates, acid chlorides and alkyl chlorides. These chemicals are processed for a wide range of applications, from synthesis building blocks for pharmaceuticals and crop protection products to the production of organic peroxides. Peroxides prove their worth in the production of coating materials used, for example, to coat solar panels. They are also used in the production of a wide range of plastics for everyday use.

New cementitious floor coating

Sherwin-Williams has launched a new fast-curing cementitious floor levelling screed system for areas undergoing heavy traffic.

Sher-Crete SLX and Sher-Crete BU products provide underlay and floor screeds with thicknesses up to 50mm in a single application, making them suitable for any areas where an underlay or floor levelling screed is required



including warehouses, production facilities and storage areas for diverse industries including the aviation and automotive sectors.

The Sher-Crete Topscreed range can be used with resin flooring products where a thick sub-screed is required to create a smooth or level finish to heavily textured substrates.

Available to purchase across Europe, Sher-Crete SLX is a powder product which requires just the addition of water. Applied by trowel or pump, its polymer-rich high-strength formulation creates a monolithic bond to a substrate, while its protein-free properties make it suitable for biologically sensitive areas such as laboratories, pharmaceutical settings or similarly sensitive areas.

The fast-curing schedule of the product allows for light traffic in as little as two hours and forklift traffic in 36 hours. It can then be sealed with a resin coat such as Resuflor HB to create an aesthetically pleasing anti-slip floor which is resistant to chemicals and process liquids, creating a hygienic, cleanable finish.



New R&D centre

A new £10 million global research and development centre has been opened by AkzoNobel at its Slough site in the UK – adding to a growing list of similar facilities located in countries around the world.

The facility – home to 120 specialists – will act as a major hub within the company's worldwide R&D network and help to further advance AkzoNobel's innovation capabilities, especially in the area of decorative paints.

It's the latest in a series of centres opened by AkzoNobel designed to further advance the company's pioneering product development. These include an automotive facility in Poland, an Application Training Centre in Dubai, an Innovation Campus in Felling, UK, and a global innovation, development and training centre in Qatar for the Marine Coatings business.

↑ Sherwin-Williams has launched a new fast-curing cementitious floor levelling screed system called Sher-Crete for areas undergoing heavy traffic.

↖ A new £10 million global R&D centre has been opened by AkzoNobel in the UK

Action on greenwash claims in paints

The British Coatings Federation (BCF) has launched a new online guide, 'Green Claims Guide to Decorative Paints', to tackle the rising number of green claims emerging in the decorative paints industry.

According to the UK Government's website, green claims (sometimes called 'environmental claims' or 'eco-friendly claims') are 'claims that show how a product, service, brand or business provides a benefit or is less harmful to the environment'.

In an ever more competitive marketplace, the makers of decorative paints often rely on unique selling points to make their products stand out. Some companies, however, may be misleading consumers with unsubstantiated green claims about their products. A recent international analysis of websites conducted by the Competition and Markets Authority (CMA) found that 40% of green claims made online could be misleading.

'Non-Toxic', 'Natural', 'Vegan', 'Child and Pet-safe', 'Eco-friendly' and 'Organic' – these are just some of the claims that businesses are using to market decorative paint products to consumers. The BCF, the UK's Trade Association representing decorative paint manufacturers, is urging consumers to consult its guide when faced with claims in order to validate them.

"With consumers becoming increasingly more inclined to make more sustainably conscious purchases, BCF are recording increasing numbers of news articles around the subject of 'eco-paints', as well as reports from our members in the decorative paints industry of emerging companies making unsubstantiated claims," explains BCF Chief Executive Officer Tom Bowtell. "Such claims, if unproven, can be damaging to the decorative paints industry's reputation, as well as misleading consumers."

BCF's green claims guide breaks down the definitions of some of the most commonly used phrases and buzzwords when marketing decorative paints to consumers. The aim is to create a level playing field within the industry, ensure businesses are complying with the law and that consumers are not being misled.

Improved manufacturing capabilities

Global specialty chemical manufacturer Huntsman recently hosted a formal event at its polyurethane elastomers production facility in Ringwood, Illinois, to mark the completion of a series of strategic investments in its thermoplastic polyurethane (TPU) manufacturing capabilities for end applications in paint protection film and security glazing.

Huntsman is one of the longest-standing producers of TPUs for protective film applications. For more than 45 years, the business has been making high performance TPUs that form the basis of paint protection films, surface protection systems and security glazing technologies.

Over the last two years Huntsman has constructed a purpose-built TPU manufacturing facility for protective film technologies at its Ringwood site – fitting it out with cutting edge automation equipment. This investment has helped increase the output of products within Huntsman's renowned Krystalgran and Krystalflex TPU portfolios, which set the gold standard for protective film systems worldwide.

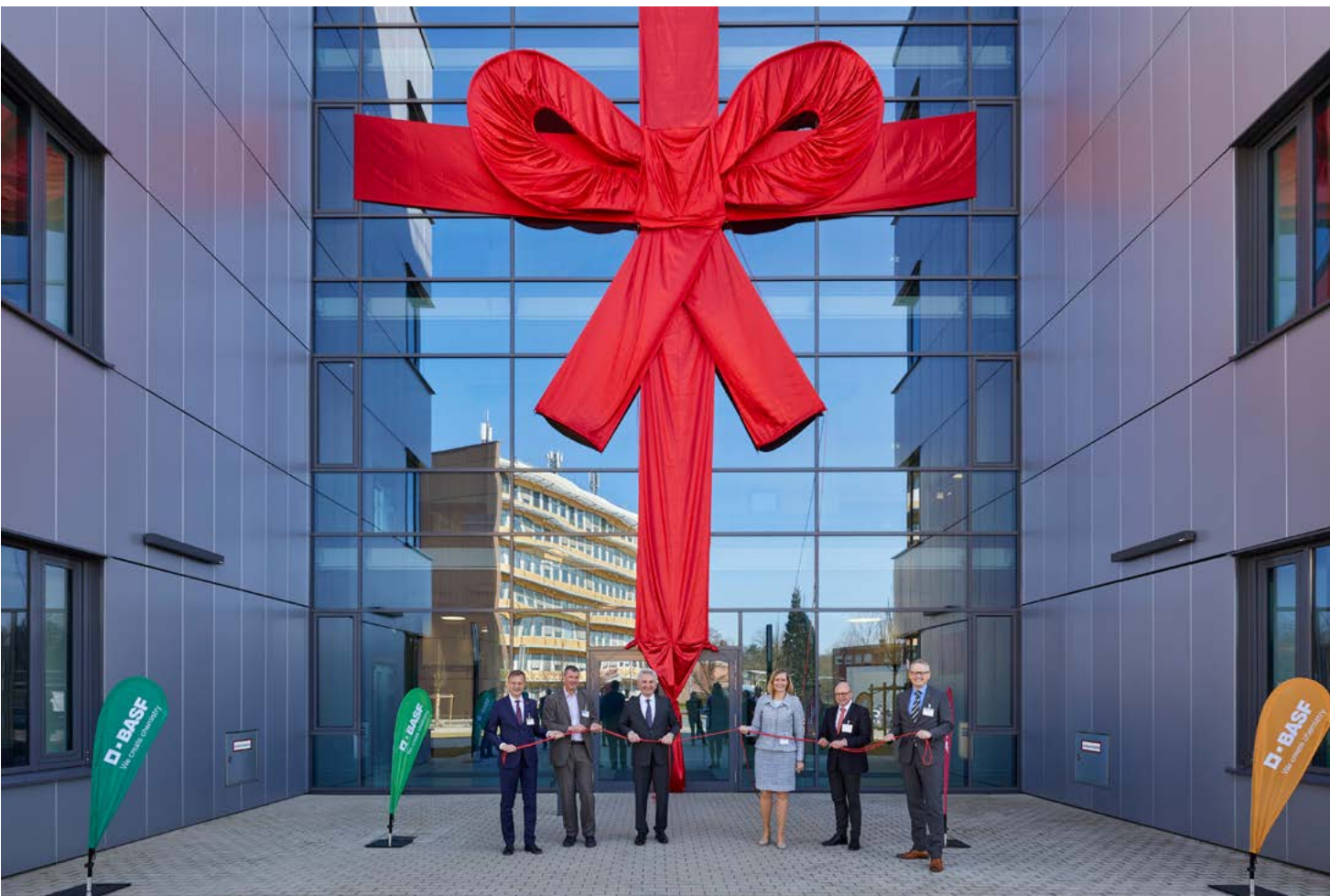
Huntsman Krystalgran TPU products are trusted by some of the world's biggest paint protection film producers and renowned for their exceptional pliability, product quality and consistency, and UV resistance. Krystalgran TPU products, which are sold as pellets, are used to enhance paint protection in the automotive industry. They are also used in electronic film applications, in signage projects, and to protect the leading edge of helicopter and wind turbine blades. Krystalflex films, which are the benchmark in interlayer laminating applications within the glass industry, are typically used to strengthen anti-ballistic glass used in military vehicles, banks and government buildings.

New laboratory

BASF has opened a new laboratory building for the development of automotive refinish coatings and innovations beyond paint at its

→ Huntsman recently hosted a formal event at its polyurethane elastomers production facility in Ringwood, Illinois





site in Münster, Germany. It underlines the Coatings division's global position as a future-oriented and innovative company. "It is another component of our positioning as a global innovation centre for BASF Coatings," explains Uta Holzenkamp, Head of BASF's Coatings Division. "We are thus complementing a series of global technical innovations. This includes the 'Lean Lab', which we started operating in 2018 at this site, as well as our plant for the functionalisation of films for various industries."

With its new building, BASF Coatings contributes towards BASF's target to reach net zero carbon emission for 2050. "The laboratory building is a huge milestone for the development and formulation of sustainable product solutions," says Chris Titmarsh, head of Automotive Refinish Coatings Solutions EMEA. "This includes our state-of-the-art waterborne refinish paint portfolio Glasurit 100 Line and R-M AGILIS. With the lowest value of volatile organic compounds (VOCs) on the market, they are the eco-friendliest automotive refinish paint lines available."



BASF has opened a new laboratory building for the development of automotive refinish coatings and innovations in Münster, Germany





↑ Ib Jensen has been appointed new CFO at Perstorp Holding AB

New appointment

Ib Jensen has been appointed new CFO at Perstorp Holding AB as of February 1. Jensen is a senior executive with a solid background, and most recently comes from the position of CFO at Arxada, a carve-out of Lonza Specialty Ingredients.

His previous experience includes CFO and executive roles within finance and IT at companies such as Lonza, Syngenta, Danisco and Lego.

"I'm very excited and honoured to join Perstorp at this stage of their journey and I'm looking forward to being part of the team", says Jensen.

"It is with great pleasure we welcome such a seasoned executive into our team and the CFO role," says Perstorp President & CEO Jan Secher. "In particular I value the highly relevant experience from our industry. However most importantly, Ib has a great personality and I am convinced he will fit into our already diverse team and contribute to future value creation in a very successful way."

Jensen takes over the CFO role from Ulf Berghult, who will leave Perstorp in April.

Enhanced powder coatings range

AkzoNobel has further enhanced its Interpon Redox range of powder coatings with the launch of Redox One Coat, a corrosion prevention solution that delivers all the protection expected from the Redox name but in a single coat.

Easy to apply and no additional requirements to pre-treatment, just a single application of Interpon Redox One Coat offers agricultural and construction equipment, metal outdoor furniture, lighting, leisure equipment and steel products protection up to corrosion category C4M (ISO 12944). And because it is so simple to use, no outsourcing or specific staff training is required.

Interpon Redox One Coat differs from conventional coating systems which require a primer and topcoat, adding to its sustainability credentials by saving on material usage and energy, and improving productivity without compromising on protection.

The new powder coating also combines an ideal finish with high weatherability, delivering results that are not only highly functional, but that also look good. As with all products within the Interpon powder coatings portfolio, the range also comes free from VOCs, solvents or any other potentially harmful components, and produces less waste.

"We know that corrosion protection is not a nice to have, it's essential," says Jorrit van Rijn, Global Industrial Segment Manager of Powder Coatings at AkzoNobel. "We also know that you need simple solutions to get the job done. Through our constant innovation and investment in R&D, we've created a solution that does both, and will help you realize savings in time and money without sacrificing anything in quality and performance." ■





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